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US Army Corps
of Engineers

Construction Engineering
Research Laboratories

Environmental Review Guide for Operations (ERGO)

*A Compliance Assessment Manual for Use at All USACE
Civil-Funded Projects and Facilities*

The number of environmental laws and regulations have continued to grow in the United States, making compliance with these regulations increasingly difficult. Environmental assessments became a way to determine operational consistency and compliance with current environmental regulations. The U.S. Army Corps of Engineers (USACE) has adopted an environmental compliance assessment program, based on the Environmental Review Guide for Operations (ERGO) that identifies and corrects current and potential compliance problems.

Beginning in 1989, the U.S. Army Construction Engineering Research Laboratories (USACERL) and a USACE steering committee began the research that led to the publication of the ERGO. The concept was to combine Code of Federal Regulations (CFRs), Department of Defense (DOD) regulations, Department of the Army and Engineer Regulations (ERs), along with documentation of good management practices, into a series of checklists for use by compliance assessment personnel. The ERGO checklists are specifically designed for application to the hydroelectric plants, flood control dams, navigation locks, public recreation facilities, floating plant, maintenance yards, laboratories, and other facilities related to the Army's Civil Works mission.

The ERGO manual is updated annually to address new environmental laws and regulations.

Environmental Stewardship/Investing in the Future

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FOREWORD

This research was performed for the Headquarters, U.S. Army Corps of Engineers (HQUSACE) Directorate of Civil Works, under FAD Number 93-08292, dated March 1993. The HQUSACE technical director is Jim Wolcott, CECW-OA.

The research was performed by the Environmental Compliance Modeling and Systems Division (EC) of the Environmental Sustainment Laboratory (EL), U.S. Army Construction Engineering Research Laboratories (USACERL). The Principal Investigator was Donna J. Schell, Environmental Protocol Team, CECER-ECP. Tina M. Hurt, CECER-ECP, was Associate Investigator. Dr. Diane K. Mann, CECER-ECP is Acting Team Leader. Dr. John T. Bandy is Acting Chief, CECER-EC, and William D. Goran is Acting Chief, CECER-EL.

LTC David J. Rehbein is Commander, USACERL, and Dr. L. R. Shaffer is Director.

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NOTICE

This manual is intended as general guidance for personnel at certain USACE projects and facilities. It is not, nor is it intended to be, a complete treatise on environmental laws and regulations. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information contained herein. For any specific questions about, or interpretations of, the legal references herein, consult appropriate legal counsel.

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PROGRAM BACKGROUND

APPLICABILITY

The 1994 *Environmental Review Guide for Operations (ERGO)* applies to all USACE Civil Works activities, operating projects, facilities, and floating plant. Outgranted lands and concessions are also included.

The ERGO is concerned with environmental compliance, not restoration activities. Environmental assessment manuals have also been developed for other military programs. The ERGO is designed as a reference for office and field managers to use along with the appropriate technical experts and the Office of Counsel to determine if USACE activities are being conducted in compliance with Federal environmental laws and regulations. It can also be used as a formal environmental audit program.

The Operations, Construction, and Readiness Division of the Civil Works Directorate initiated the ERGO as a comprehensive self-evaluation and program management system for achieving, maintaining, and monitoring compliance with environmental laws and regulations at USACE facilities and operating projects. Objectives of an environmental review are to:

- enhance USACE environmental compliance at Federal, state, and local levels
- improve USACE environmental management
- build supporting financial programs and budgets
- assure supervisors their environmental programs are being implemented effectively in accordance with USACE goals and objectives.

Periodic environmental compliance evaluations are invaluable to managers. The evaluations assess environmental compliance and provide necessary feedback to supervisors for organizing, directing, and controlling compliance and protection activities.

The updating and revision of the ERGO manual is overseen by a steering committee. Mr. Lloyd Williamson (CESAW-CO-RK) is the chairman of the steering committee that includes Deborah Chenoweth (CEMRD-CO-R), Jimmie Brown (CENPW-OP-RM), Dr. Loren M. Mason (CESWT-OD-RR), and Dr. Diane K. Mann (CECER-ECP).

The contents of this manual are up-to-date as of 22 February 1994. It includes provisions of Executive Order (EO) 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*.

MANUAL OBJECTIVES

The ERGO is intended to serve as the primary tool for conducting environmental compliance evaluations. The objectives of the manual are to:

- compile applicable Federal, Department of Defense (DOD), and Army Regulations (ARs) associated with USACE operations and activities
- synthesize environmental regulations, good management practices (GMPs), and risk management issues into consistent and easy-to-use checklists
- serve as a reference document and educational tool for daily operations
- serve as a standard for evaluation of environmental compliance
- serve as a guide for implementing the U.S. Army Environmental Strategy Into The 21st Century, which emphasizes environmental stewardship as an integral part of everything USACE does.

MANUAL ORGANIZATION

Many operations and activities at USACE facilities can affect public health and the environment if not controlled or properly managed. A number of these activities and operations are regulated by Federal, state, and local regulations, as well as Engineer Regulations (ERs), and USACE directives and policies.

After reviewing activities at USACE facilities, it was apparent that most environmental regulations and facility activities could be grouped into major categories of environmental compliance.

This manual is divided into 13 major sections that correspond to the following compliance categories:

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| 11 | Wastewater Management | 11-1 |
| 12 | Water Quality Management | 12-1 |
| 13 | Floating Plant Management | 13-1 |

Each section is organized in the same format:

A. Applicability

Provides guidance on the major activities and operations that are included in the section and a brief description of the major application.

B. Federal Legislation

Identifies, in summary form, key regulatory issues associated with the specific compliance area in Federal law.

C. State/Local Regulations

Identifies particular state and/or local regulations that address requirements associated with the specific compliance category.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

Identifies ERs and DOD directives or regulations that address requirements associated with the specific compliance category.

E. Key Compliance Requirements

Identifies the most common areas that require permits and monitoring activities.

F. Key Compliance Definitions

Presents definitions for those key terms associated with each compliance category.

USACE REGULATIONS

ER 1130-2-400, *Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects*, 1 June 1986, sets forth the policies and procedural guidance for the administration and management of Civil Works water resource projects. This regulation establishes the USACE policy on solid waste disposal, water, air, noise, visual pollution control, and pest control. The regulation states that the ultimate responsibility for the project's natural resources rests with the USACE. The management of fish and wildlife resources in cooperation with state and Federal agencies is also addressed.

Additional information can be found in the following ERs and engineer manuals (EMs):

- | | |
|----------------|---|
| ER 200-2-2 | <i>Procedures for Implementing National Environmental Policy Act (NEPA)</i> , 4 March 1988. |
| ER 500-1-1 | <i>Natural Disaster Procedures</i> , 11 March 1991. |
| ER 1110-2-410 | <i>Design of Recreation Sites, Areas, and Facilities Access and Circulation</i> , 31 May 1988. |
| ER 1110-2-1402 | <i>Hydrologic Investigation Requirements for Water Quality Control</i> , 12 November 1976. |
| ER 1130-2-334 | <i>Reporting of Water Quality Management Activities at Corps Civil Works Projects</i> , 30 April 1986. |
| ER 1130-2-400 | <i>Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects</i> , 1 June 1986. |
| ER 1130-2-405 | <i>Use of Off-Road Vehicles on Civil Works Projects</i> , 17 January 1974. |
| ER 1130-2-406 | <i>Shoreline Management at Civil Works Projects</i> , 31 October 1990. |

- ER 1130-2-407 *Operating and Testing Potable Water Systems in Compliance with the Safe Drinking Water Act (Public Law (PL) 93-1523), 10 June 1977.*
- ER 1130-2-412 *Aquatic Plant Control Program, 1 September 1984.*
- ER 1130-2-413 *Pest Control Program for Civil Works Projects, 1 August 1989.*
- ER 1130-2-415 *Water Quality Data Collection, Implementation, and Application Activities, 28 October 1976.*
- ER 1130-2-423 *Polychlorinated Biphenyls (PCBs) Use and Disposition, 1 November 1983.*
- ER 1130-2-433 *Collection Management and Curation of Archeological and Historic Data, 30 April 1990.*
- ER 1130-2-434 *Response to Oil and Hazardous Substance Incidents, 1 July 1985.*
- ER 1130-2-435 *Preparation of Project Master Plans, 30 December 1987.*
- ER 1130-2-438 *Project Construction and Operations: Historic Preservation Program, 26 October 1987.*
- ER 1165-2-132 *Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects, 26 June 1992.*
- ER 1165-2-116 *Water Resources Policies and Authorities: Pollution Control at Civil Works Projects, 28 February 1968.*
- ER 1165-2-400 *Recreation Planning, Development, and Management Policies, 9 August 1985.*
- EM 385-1-1 *Safety and Health Requirements Manual, 1 October 1992.*
- EM 1110-1-400 *Recreation Planning and Design Criteria, 31 July 1987.*
- EM 1110-2-410 *Design of Recreation Sites, Areas, and Facilities, 31 December 1982.*

Points of Contact (POCs)

To facilitate an ERGO evaluation, guidance is provided on the department or location at the facility, district, or division where action items are applicable. The following are used with their assigned numbers throughout the manual and are referred to in a legend at the bottom of each checklist page. This list is only a general guide and should be adapted to fit the functional organization of a division or district. Because of the complexity of environmental compliance issues facing USACE facilities, the Office of Counsel should be considered an integral component of the compliance assessment process.

Division Office

- (1) Natural Resources Management
- (2) Engineering
- (3) Safety and Occupational Health Office
- (4) Operations

District Office

- (5) Environmental Compliance Coordinator (ECC)
- (6) Natural Resources Management
- (7) Engineering
- (8) Safety and Occupational Health Office
- (9) Logistics
- (10) Operations
- (11) Cultural/Historic Resources
- (12) Real Estate
- (13) Planning
- (14) Emergency Management

Project

- (15) Project Resource Manager
- (16a) Facility Manager, Engineer Yards
- (16b) Facility Manager, Maintenance Yards
- (16c) Powerhouse Superintendent
- (16d) Facility Manager, Locks
- (16e) Facility Manager, Dams
- (17) Lab Manager

[illegible]

(NOTE: Office of Counsel and Division ECCs should be considered POCs for all compliance requirements and violations.)

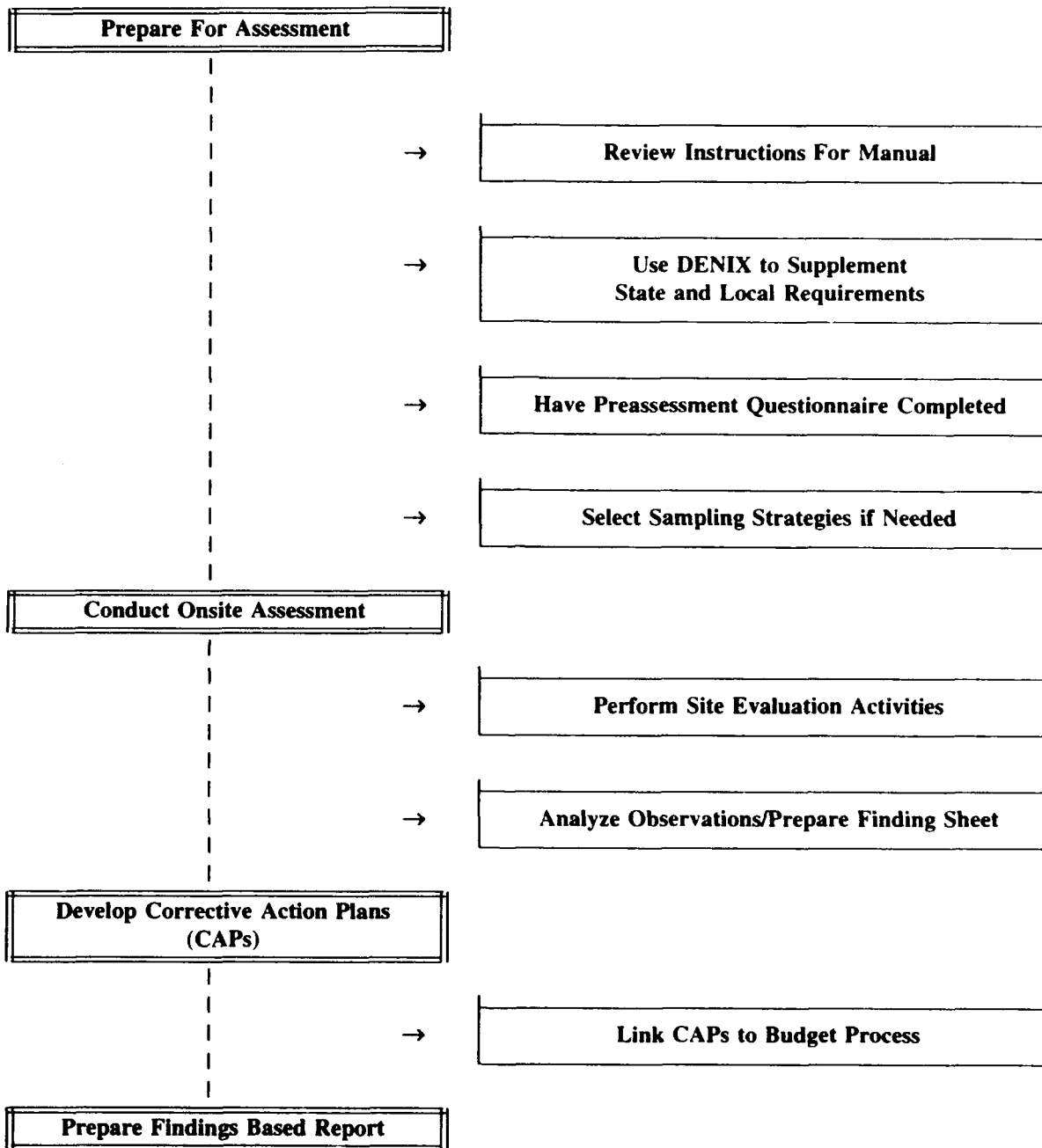
- (1) **Division Natural Resources Management** reviews and provides guidance to the districts for all aspects of administration of the natural resource management program, including recreation and natural resources. Ensures that activities are conducted in accordance with applicable environmental laws and USACE regulations and policies.
- (2) **Division Engineering** plans, coordinates, supervises, or directs the regulation of flood control reservoirs and power plants within its geographical boundaries. Exercises staff supervision over the districts for technical matters pertaining to all aspects of engineering and ensures adequacy of design and compliance with Federal, state, and local environmental laws and USACE regulations and policies.
- (3) **Division Safety and Occupational Health Office** provides guidance and direction to the division and districts on all aspects of the safety and occupational health program. Ensures that adequate standards are incorporated into operating procedures, manuals, directives, and other instructions. Ensures compliance with all *Occupational Safety and Health Act (OSHA)* requirements as well as all USACE safety regulations and policies.
- (4) **Division Operations** reviews and provides guidance to the districts for all aspects of administration relating to the operation and maintenance of multipurpose dams, flood control structures, locks, power plants, and other operating facilities. Ensures compliance with applicable USACE regulations and policies.
- (5) **ECC** ensures timely and consistent notification actions, reports, and guidance on environmental laws and regulations. Supports action to ensure timely and appropriate compliance at facilities.
- (6) **District Natural Resources Management** provides guidance and direction to the projects for all aspects of the administration of the Natural Resources Management Program, including recreation and natural resources. Directs project activities in accordance with applicable environmental laws and USACE regulations and policies.
- (7) **District Engineering Division** plans, coordinates, and directs the regulation of flood control reservoirs and power plants within responsible geographical boundaries. Exercises control over technical matters pertaining to engineering design and ensures compliance with applicable environmental laws and USACE regulations and policies.

- (8) **District Safety and Occupational Health Office** provides guidance and direction to the district and field offices on all aspects of the Safety and Occupational Health Program. Inspects for compliance with all *OSHA* requirements as well as all USACE safety regulations and policies.
- (9) **District Logistics** manages and administers logistical programs, such as office building maintenance and motor pools. Provides guidance on the disposal of excess property and materials.
- (10) **District Operations** provides guidance and direction to the district and field projects. Supervises and directs all aspects of the district programs relating to the operation and maintenance of multipurpose dams, flood control structures, locks, power plants, and other operating facilities. Ensures compliance with applicable USACE regulations and policies.
- (11) **District Cultural/Historic Resources Coordinator** has oversight responsibilities for all aspects of planning, coordination, and execution of archaeological and historical work in compliance with environmental laws and USACE policies and regulations. Job titles may vary.
- (12) **District Real Estate** is responsible for real estate programs and activities, including acquisition, outgrants, and disposal. Ensures that activities are conducted in accordance with appropriate environmental laws and USACE policies and regulations for district civil works and, where appropriate, military lands.
- (13) **District Planning** has oversight responsibilities for the preparation of master plans and supplements and is generally the POC for consultation with the U.S. Fish and Wildlife Service (FWS) and other agencies for compliance with requirements from the *National Environmental Policy Act (NEPA)*. Ensures that activities are in compliance with appropriate environmental laws and USACE policies and regulations.
- (14) **District Emergency Management** plans, coordinates, and directs activities related to flood and coastal storm emergencies and disaster relief assistance within responsible geographical boundaries. Exercises control over operating procedures and policies pertaining to authorized disaster activities or emergency declarations in accordance with applicable environmental laws and USACE regulations and policies.
- (15) **Project Resource Manager** has oversight responsibilities for aspects of operations, maintenance, and administration of a water resource project and its

natural and historic resources. Ensures that project stewardships, maintenance, and operations activities are conducted in accordance with applicable environmental laws, regulations, and guidance.

- (16a) **Facility Manager, Engineer Yard** has the oversight responsibilities for all aspects of operations and maintenance conducted at the facility's engineer yard. Ensures that daily activities are conducted in accordance with applicable environmental laws, regulations, and guidance.
- (16b) **Facility Manager, Maintenance Yard** has the oversight responsibilities for all aspects of operations and maintenance conducted at the facility's maintenance yard. Ensures that daily activities are conducted in accordance with applicable environmental laws, regulations, and guidance.
- (16c) **Powerhouse Superintendent** has oversight responsibilities for all aspects of operations, maintenance, and administration of the project powerhouse, dam, and all connected or associated structures. Ensures that all project maintenance and operations activities are conducted in accordance with applicable environmental laws, regulations, and guidance.
- (16d) **Facility Manager, Locks and Dams** has oversight responsibilities for all aspects of operations, maintenance, and safety conducted at the District Civil facility. Ensures that daily activities are conducted in accordance with applicable environmental laws and USACE policies and regulations.
- (16e) **Facility Manager, Dams** has oversight responsibilities for all aspects of operations, maintenance, and safety conducted at the District Civil facility. Ensures that daily activities are conducted in accordance with applicable environmental laws and USACE policies and regulations.
- (17) **Lab Manager** has oversight responsibility for all aspects of environmental compliance, operations, maintenance, and safety at district and division USACE laboratories. Ensures that daily activities are conducted in accordance with applicable environmental laws and USACE policies and regulations.

STEPS FOR ENVIRONMENTAL ASSESSMENT



PREPARING FOR AN ASSESSMENT

Before conducting the actual assessment of a facility, the evaluator will want to review the *Instructions for Using the Manual* that begin following this section. In addition, before the assessment, a preassessment questionnaire should be sent to the facility. This questionnaire indicates to the assessment team what types of activities are performed at the facility. A sample page from a completed preassessment questionnaire is included on the following page. The blank questionnaire itself is provided, in its entirety, at the end of the introductory section. Facility personnel are to complete this questionnaire and return it to the evaluator.

In addition to sending the preassessment questionnaire, the assessment team must incorporate applicable state regulations prior to arrival at the assessment site. Methods to use in reviewing state regulations are further discussed in the *Instructions for Using the Manual*.



ERGO

Environmental Review Guide for Operations

PREASSESSMENT ENVIRONMENTAL MANAGEMENT QUESTIONNAIRE

This questionnaire will provide background information necessary to plan and conduct an environmental compliance assessment. References provided in this questionnaire are to assist in answering the questionnaire and are not intended to be all-inclusive. Refer to the Major Activities/Operations Table to determine where activities/operations overlap into several different areas.

Name of Facility: Lees Ferry Dam 270

| QUESTION/DESCRIPTION | RESPONSE | REFERENCE |
|----------------------|----------|-----------|
|----------------------|----------|-----------|

SECTION 1. Air Emissions Management:

1. Does the facility operate a fuel burner (central steam plant, or hot water or hot water steam boiler)?

Yes

If **YES** how large and what fuel is used? See ERGO items 1-4 through 1-7.

Size

Fuel

500 Btu heating oil #2

2. Does the facility operate an incinerator? How large? _____

No

If **YES** see ERGO item 1-3.

3. Does the facility dispense, store, or transfer gasoline?

Types: Diesel

Yes

If **YES** see ERGO items 1-8 through 1-13.

4. Does the facility operate printing presses?

No

If **YES** see ERGO item 1-14.

INSTRUCTIONS FOR USING THE MANUAL

Using the ERGO manual is actually a four-step process. It begins with the preassessment questionnaire (see page lxiii), then the Major Activity tables (page lxxxv), then the guidance page immediately preceding the checklist portion of each section (see page xxiv), and finally the checklist itself for each section. The following is an example of how this process works in practice:

Step 1. You find, from reviewing the preassessment questionnaire, that the facility has polychlorinated biphenyl (PCB) Transformers.

QUESTION/DESCRIPTION

RESPONSE REFERENCE

SECTION 9, Special Pollutants Management:

1. Does facility have PCBs of any kind?

Type transformers
Quantities 5

Yes

If YES, see ERGO
items 9-4 through 9-11

2. Does facility have PCB Transformers?

Yes

If YES, see ERGO
items 9-12 through 9-19

Step 2. Go to the Major Activities tables that begin on page lxxxv. There you will find row 15, *PCB Electrical Equipment*. Follow that row through the table and you'll come to a bullet (•) under column 9, *Special Pollutants Management*.

| Major Activities/Operations at USACE Projects and Related Sections | | | | | |
|--|-------------------------------------|--------------------|---------------------------|---------------------------------|----------------------------------|
| Major Activities/ Operations | SECTIONS | | | | |
| | 9 Special Pollutants Mgmt. | 10 UST Mgmt. | 11 Wastewater Mgmt. | 12 Water Quality Mgmt. | 13 Floating Plant Mgmt. |
| 15. PCB Electrical Equipment | • | | | | • |
| 16. Pesticide/ Herbicide Use | | | | | • |
| 17. Environmental Noise | • | | | | • |
| 18. Emergency Planning | | | | | |
| 19. Asbestos Removal | • | | | | |
| 20. Underground Storage Tanks | | • | | | |

Step 3. Turn to page 9-17, which contains the guidance sheet for section 9, and you will notice that items 9-1 through 9-3 apply to all facilities.

**SPECIAL POLLUTANTS MANAGEMENT
GUIDANCE FOR WORKSHEET USERS**

| | REFER TO WORKSHEET ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|----------------|---------------------------------|--|
| All Facilities | 9-1 through 9-3 | (1)(5)(6)(8)(15)(16) |

Next you'll see that if the facility has items with PCBs, you must review items 9-4 through 9-8.

**SPECIAL POLLUTANTS MANAGEMENT
GUIDANCE FOR WORKSHEET USERS**

| | REFER TO WORKSHEET ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|------------------|---------------------------------|--|
| All Facilities | 9-1 through 9-3 | (1)(5)(6)(8)(15)(16) |
| PCBs | 9-4 through 9-8 | (5)(8)(15)(16) |
| Records | 9-9 through 9-11 | (5)(8)(15) |
| PCB Transformers | 9-12 through 9-19 | (3)(5)(8)(10)(15)(16) |
| PCB Spills | 9-20 through 9-22 | (3)(5)(8) |

Notice that POCs are also shown in the third column of this page. They are also listed within each item in the section.

**SPECIAL POLLUTANTS MANAGEMENT
GUIDANCE FOR WORKSHEET USERS**

| | REFER TO WORKSHEET ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|------------------|---------------------------------|--|
| All Facilities | 9-1 through 9-3 | (1)(5)(6)(8)(15)(16) |
| PCBs | 9-4 through 9-8 | (5)(8)(15)(16) |
| Records | 9-9 through 9-11 | (5)(8)(15) |
| PCB Transformers | 9-12 through 9-19 | (3)(5)(8)(10)(15)(16) |

- (a) CONTACT/LOCATION CODE:
- (1) Division Office - Natural Resources Management
 - (2) Division Office - Engineering
 - (3) Division Office - Safety and Occupational Health Office
 - (4) Division Office - Operations
 - (5) District Office - Environmental Compliance Coordinator (ECC)
 - (6) District Office - Natural Resources Management
 - (7) District Office - Engineering
 - (8) District Office - Safety and Occupational Health Office
 - (9) District Office - Logistics
 - (10) District Office - Operations
 - (11) District Office - Cultural/Historic Resources
 - (12) District Office - Real Estate
 - (13) District Office - Planning
 - (14) District Office - Emergency Management
 - (15) Project - Project Resource Manager
 - (16) Facility Manager
 - (17) Lab Manager

(NOTE: Office of Counsel should be considered a POC for all compliance requirements and violations.)
DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

Before moving on to the checklist within the section, it would be a good idea to review the introductory information at the beginning of the section if you haven't already done so. This will provide you with detailed information on the governing regulations, key compliance requirements, and key compliance definitions. Throughout the introductory information and the checklist you will find that some conversions are in brackets [], indicating that they were done by USACERL. If the conversions are in parentheses (), then they were provided by the regulations themselves.

Step 4. In this example, question 9-17 illustrates a typical checklist question:

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>9-17. Inspections must be performed once every 3 mo for all in-service PCB Transformers with greater than 500 ppm PCB (40 CFR 761.30(a)(1)(ix) and 761.30(a)(1)(xii) through 761.30(a)(1)(xiv)).</p> | <p>Verify that applicable transformers are inspected at least once every 3 mo by reviewing inspection records. (8)(15)(16)</p> <p>Determine if any PCB Transformers have been leaking. (8)(15)(16)</p> <p>Verify that, if any leaking transformers have been discovered, proper reporting procedures have been followed. (8)(15)(16)</p> <p>Verify that the following information is recorded for each PCB Transformer inspection: (8)(15)</p> <ul style="list-style-type: none"> - location of transformer - dates of each visual inspection - date when any leak was discovered - name of person conducting inspection - location and estimate of the dielectric fluid quantity for any leaks - data and description of any cleanup, containment, or repair performed - results of any daily inspections for transformers with uncorrected active leaks. <p>(NOTE: Reduced visual inspections of at least once every 12 mo are allowed for PCB Transformers with impervious, undrained secondary containment capacity of 100 percent of dielectric fluid and for PCB Transformers tested and found to contain less than 60,000 ppm PCB.)</p> <p>(NOTE: Increased visual inspections of once per week are required for any PCB Transformer in use or stored for reuse that poses an exposure risk to food or feed.)</p> <p>Verify that records of inspection and maintenance are kept for 3 yr after disposal. (8)(15)</p> |

DIVISION: (1) Natural Resources Management (3) Safety and Occupational Health Office DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operation PROJECT (15) Project Resource Manager (16) Facility Manager

The checklist portion of ERGO is divided into two columns, the first of which is a statement of a requirement. This may be a strict regulatory requirement, in which case the citation is given, or it may be considered a good management practice (GMP), a practice that helps maintain compliance but is not specifically covered by regulation.

The second column provides instructions for conducting the compliance evaluation. These instructions are intended to be specific action items that should be accomplished by the assessment team. Some instructions may be simple documentation checks that take only a few minutes, while others may require physical inspection of a facility. The contact/location information in parentheses is intended as guidance for determining to which departments or locations at the facility action items are applicable. Each contact/location code is referenced in a legend at the bottom of the page.

Following the checklist in each section is a worksheet that can be photocopied for field work. This sheet is divided into two columns. The first column is a checklist for items that are not applicable (NA) to the facility, items with which the facility is complying with (C), or items requiring management action (RMA). The second worksheet column allows room for more detailed notations or comments.

| | | | | |
|----------------------|--|---|-------|--------------|
| PROJECT OR FACILITY: | | COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | | REVIEWER COMMENTS: | | |
| | | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

To use the manual as a field tool, needed sections can be removed from the manual and placed in a binder alongside the worksheet; each checklist page in a section should have a worksheet placed beside it for notations, references, and locations.

| SPECIAL POLLUTANTS MANAGEMENT USACE ERGO | | DATE | REVIEWER |
|---|-------------------------------|------|----------|
| COMPLIANCE CATEGORY | STATUS | DATE | REVIEWER |
| <p>1. Review the facility's Special Pollutants Management Plan (SPMP) to ensure it is up-to-date and reflects the latest regulatory requirements.</p> <p>2. Verify that the facility has implemented the SPMP's requirements for the management of special pollutants.</p> <p>3. Check for any violations of the SPMP's requirements.</p> <p>4. Review the facility's records for special pollutants management.</p> <p>5. Verify that the facility has implemented the SPMP's requirements for the management of special pollutants.</p> <p>6. Check for any violations of the SPMP's requirements.</p> <p>7. Review the facility's records for special pollutants management.</p> <p>8. Verify that the facility has implemented the SPMP's requirements for the management of special pollutants.</p> <p>9. Check for any violations of the SPMP's requirements.</p> <p>10. Review the facility's records for special pollutants management.</p> | <p>NA</p> <p>C</p> <p>RMA</p> | | |

These notations will provide a record for use in preparing the final report and should include both situations of substandard operation that require attention and those operations that exceed requirements or provide examples of good programs. For future reference and clarity, it is essential to identify the location being reviewed by building number or other reference.

| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
|----------------------|--|-------|--------------|
| STATUS: NA C RMA | REVIEWER COMMENTS: | | |
| | ✓ 3 transformers in storage building Building 2000 not registered with fire department | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

The evaluation procedures are designed as an aid and should not be considered exhaustive. Use of the guide requires the evaluator's judgment in determining the focus and extent of further investigation. Appropriate state regulations must be reviewed and the substantive requirements of state/local regulations pertinent to individual facilities incorporated in the assessment process. Findings relating to state and local issues can be written up under checklist item 3 in each section. The Office of Counsel should be consulted regarding the legal effects of state regulations.

Previously, the Computer-Aided Environmental Legislative Data System (CELDS) could be consulted for information on state environmental laws and regulations. CELDS has been replaced with the *Defense Environmental Network and Information Exchange (DENIX)*.

The goal of DENIX is to provide DOD personnel in the environmental arena with a central communications platform from which to obtain timely access to environmental legislative, compliance, restoration, cleanup, and DOD guidance information.

All districts should obtain and maintain access to DENIX, in conjunction with ERGO, from environmental compliance management down to the project/site manager level. If you have previously had access to CELDS, you also have access to DENIX.

For further information concerning the content or functionality of DENIX, or to inquire about obtaining a system login and password, call the DENIX Hotline 1-800-642-3332.

SELECTING SAMPLING STRATEGIES

A. INTRODUCTION

A fundamental component of any assessment involves the review of a facility's environmental internal controls and activities to determine compliance or noncompliance with environmental regulations. Because assessments are a check of the *overall* compliance status of a facility, and are conducted over a relatively short period of time, assessors generally do not examine entire populations of records, documents, or employees. Instead, assessors sample populations in order to draw conclusions regarding compliance with performance standards.

To help ensure the gathering of appropriate sampling information, the following process is typically used by assessors:

1. Determine objective of protocol.
2. Identify population for review.
3. Select sampling method.
4. Determine sample size.
5. Document results of sampling.

B. BASIC SAMPLING PROCESS

1. *Determine Objective of Protocol*
 - Specify what is being confirmed.
 - Consider the nature of the regulatory or internal standard to accurately identify the boundaries of the population under review.
2. *Identify Population for Review*
 - Estimate size of population with:
 - a review of selected documents
 - observations made during step one.
 - Pay attention to major subsets or key segments of population that need to be included in review.
 - Define population before starting to sample.
3. *Select Sampling Method*
 - *Random*: selecting items by chance. If done properly, each item in the population should have an equal chance of being selected and there should be no subjective determinations to bias the sample.
 - *Block*: analyzing certain segments of records or areas of the facility. For example, if files are arranged alphabetically, in numerical order, or chronologically, one or more blocks (e.g., all the E's, records numbered 51 through 75, or January and June files) could be selected. While the block method is easy to use, it neglects entire segments of the population.

- *Stratification*: arranging items by categories (e.g., high versus low effluent volumes) based on assessor's judgement of risk. Higher risk categories then receive greater review and testing.
- *Interval*: selecting samples at specific intervals (e.g., every *n*th segment of the population is analyzed) with the first item being selected at random. Increased confidence is achieved where several intervals with different starts are used.

4. *Determine Sample Size*

- Two ways to determine sample size:
 - statistically
 - using assessor's judgement.
- In most environmental assessment situations, it is appropriate and adequate to develop sample sizes based on professional judgement.
- Be sure that sample size is adequate to represent total population.

5. *Document Results of Sampling*

- State the rationale for selecting sample.
- Describe how the sample was selected.
- Include the following in working papers:
 - population under review
 - how and why population was selected
 - type of sampling method employed
 - reasons sampling method was used
 - potential bias in sample
 - sample size and reasons for selecting sample size.

6. *Guideline for Selection of Sample Size*

| Size of Population | Suggested Minimum Size of Sample | | |
|--------------------|----------------------------------|------|-----|
| | A* | B* | C* |
| 2-10 | 100% | 100% | 30% |
| 11-25 | 100% | 40% | 20% |
| 26-50 | 50% | 20% | 15% |
| 51-100 | 25% | 15% | 10% |
| 101-250 | 15% | 10% | 5% |
| 251-500 | 10% | 5% | 3% |
| 501-1000 | 5% | 3% | 2% |
| over 1000 | 3% | 2% | 1% |

A* Suggested minimum sample size for a population(s) being reviewed that is considered to be extremely important in terms of verifying compliance with applicable requirements and/or is of critical concern to the organization in terms of potential or actual impacts associated with noncompliance.

B* Suggested minimum sample size for a population(s) being reviewed that will provide additional information to substantiate compliance or noncompliance and/or is of considerable importance to the organization in terms of potential or actual impacts associated with noncompliance.

C* Suggested minimum sample size for a population(s) being reviewed that will provide ancillary information in terms of verifying overall compliance with a requirement.

CONDUCTING ONSITE ASSESSMENTS

Site Evaluation Activities

Onsite, the evaluator will conduct record searches, interviews, and site surveys to determine the compliance status of the installation or facility. Operations are compared with environmental standards and any deficiencies are written up as findings. The data collected should be sufficient, reliable, and relevant to provide a sound basis for evaluating findings and recommendations. Typically, evaluators will complete a worksheet in the field to the best of their abilities and, at a later time, prior to leaving the facility, complete the Finding Summary. Figure 1 (page xxxvii) is a sample worksheet and a worksheet is located at the beginning of each chapter in this manual.

Analyze Observations/Prepare Finding Summaries

A Finding Summary will be completed for each finding noted on the worksheet. In instances where multiple Finding Summaries could be filled out for a single observation, only the most significant finding should be documented on a Finding Summary. All other related findings should be referenced on the same summary.

The information contained on these sheets will make up the basis of the ERGO report for each completed assessment. Figure 2 (page xxxix) shows a blank Finding Summary form.

All fields on the ERGO Finding Summary must be filled out, up to **SAMPLING RESULTS** for negative findings and **CRITERIA** for positive findings. The **CONDITION** is a factual statement describing the status of the process, permit, or situation under investigation, and the **CRITERIA** is the environmental standard (Federal, state, local, DOD, Army, GMP) the facility is being measured against. A condition may be positive if the facility is going above and beyond the requirements. **SUGGESTED SOLUTIONS** is an optional entry and may include easily identifiable solutions to the deficiency. **COMMENTS** may include any corrective actions already taken or scheduled, or any other appropriate information pertaining to the finding.

Figure 3 (page xli) shows a sample completed Finding Summary. A copy of each Finding Summary is to be left with the facility with the understanding that findings may be changed or dismissed as further identification/verification is made.

DEVELOPING A CORRECTIVE ACTION PLAN (CAP)

Every Finding Summary completed for the facility should be incorporated in a Corrective Action Plan (CAP). The CAP describes the actions to be taken to correct deficiencies. Descriptions should be all-inclusive, including schedule, budget, responsible parties, and any other pertinent information. An assessment is not complete until a CAP is done, so CAPs must be implemented in a timely fashion.

Link CAPs to Civil Works O&M General Budget Processes

All unanticipated environmental compliance deficiencies, identified by a CAP, that are not budgeted and require immediate correction will be addressed by appropriate reprogramming actions.

CAP items that require out-year funding will be identified in the R-18 and R-22 Work Function Categories, consistent with guidance in EC 11-2-161.

Environmental compliance budget requests must also be included in the Report on Prevention, Control, and Abatement of Environmental Pollution at Federal Facilities (based on Office of Management and Budget (OMB) Circular A 106).

PREPARING A FINDINGS BASED REPORT

The guidance provided here for a Findings Based Report is general in context and can be modified or adapted to suit specific needs. The basic report should include:

1. Executive Summary

The executive summary is a brief overview of the assessment, which should include the following information:

- date and location of the assessment
- identification of the evaluation team
- purpose/objective of the evaluation
- table of compliance status.

2. Background

This section should include:

- brief description of project
- any unique features of its management structure
- USEPA region
- discussion of sampling techniques used, if any.

3. Environmental Compliance Status

This section should include the completed Finding Summaries and the corresponding CAP.

Figure 1

Reviewer Worksheet

| | | | |
|---------------------------------|--|--------------|---------------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

Figure 2

FINDING SUMMARY

Manual Edition Date: _____

ERGO INDIVIDUAL FINDING SHEET

(To provide detailed information for use by assessment team only)

| | | | |
|---|--|------------------------------------|--|
| MANDATORY ENTRIES | | | |
| Section. (Air, Hazardous Materials, etc.): _____ | | Question Number: _____ | |
| Type of Finding (Positive or Negative): _____ | | Building Number or Location: _____ | |
| FINDING CATEGORY (circle one): Significant Major Minor Good Management Practice | | | |
| Basis of Finding (Citation or Regulation): (Reference applicable Federal, state, and local regulations) _____ | | | |
| CONDITION (What did you find?): _____ _____ _____ | | | |
| CRITERIA (What is the actual requirement?): _____ _____ _____ | | | |
| SAMPLING RESULTS (mandatory only if sampling was used): Universe: _____ Sample Size: _____ Number of Discrepancies: _____ Percentage of Discrepancies: _____ | | | |
| Is this a repeat finding (ERGO, NOV, etc.)? _____ | | | |
| PREPARED BY: _____ | | DATE: _____ | |

SUGGESTED SOLUTION(S):

| |
|--|
| |
| |
| |

OPTIONAL ENTRIES

COMMENTS:

| |
|--|
| |
| |
| |

FINDING CATEGORIES

Significant:

A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the mission. A leaking PCB Transformer that is located next to a dining facility, for example, would most likely be a significant deficiency.

Major:

A major deficiency requires action but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

Minor:

Minor deficiencies are usually administrative in nature, even though those findings might result in a notice of violation. This category may also include temporary or occasional instances of noncompliance.

Good Management Practice (GMP):

GMP items are those for which there is no specific regulatory requirement but are considered necessary to achieve compliance with those requirements. This category also includes practices that are known to be required in regulations currently in preparation at regulatory agencies but have not been published. There may be both *positive* or *negative* good management practice findings.

Figure 3

FINDING SUMMARY

Manual Edition Date: March 1994

ERGO INDIVIDUAL FINDING SHEET

(To provide detailed information for use by assessment team only)

| | |
|---|---|
| MANDATORY ENTRIES | |
| Section (Air, Hazardous Materials, etc.): <u>Spec. Pol. Mgt. Question Number: 9-17</u> | |
| Type of Finding (Positive or Negative): <u>Positive</u> | Building Number or Location: <u>15</u> |
| FINDING CATEGORY (circle one): Significant Major Minor Good Management Practice | |
| Basis of Finding (Citation or Regulation): (Reference applicable Federal, state, and local regulations) | <u>40 CFR 761.30(a)(1)(ix), 761.30(a)(1)(xii)</u> <u>through 761.30(a)(1)(xiv)</u> |
| CONDITION (What did you find?): <u>Inspections for PCB Transformers in-service with greater than 500 ppm PCB were performed</u> <u>once per month and documented in a log book by the inspector. All logs were up to</u> <u>date and easily accessed.</u> | |
| CRITERIA (What is the actual requirement?): <u>Inspections must be performed once every 3 mo for all in-service PCB Transformers with</u> <u>greater than 500 ppm PCB.</u> | |
| SAMPLING RESULTS (mandatory only if sampling was used): Universe: _____ Sample Size: _____ Number of Discrepancies: _____ Percentage of Discrepancies: _____ | |
| Is this a repeat finding (ERGO, NOV, etc.)? _____ | |
| PREPARED BY: <u>D Smith</u> | DATE: <u>3-10-94</u> |

SUGGESTED SOLUTION(S):

| |
|--|
| |
| |
| |
| |

OPTIONAL ENTRIES

COMMENTS:

| |
|--|
| |
| |
| |

FINDING CATEGORIES

Significant:

A problem categorized as significant requires immediate attention. It poses, or has a high likelihood to pose, a direct and immediate threat to human health, safety, the environment, or the mission. A leaking PCB Transformer that is located next to a dining facility, for example, would most likely be a significant deficiency.

Major:

A major deficiency requires action but not necessarily immediate action. Major deficiencies may pose a threat to human health, safety, or the environment. Any immediate threat, however, must be categorized as significant.

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Glossary of Acronyms

| | |
|--------|--|
| AAR | Annual Application Rate |
| ACHP | Advisory Council on Historic Preservation |
| ACM | Asbestos Containing Material |
| ANSI | American National Standards Institute |
| API | American Petroleum Institute |
| AQCR | Air Quality Control Region |
| AR | Army Regulation |
| ARI | Air Conditioning and Refrigeration Institute |
| ARPA | Archeological Resources Protection Act |
| ASME | American Society of Mechanical Engineers |
| AST | Aboveground Storage Tank |
| ASTM | American Society for Testing and Materials |
| BAT | Best Available Technology |
| Btu | British Thermal Units |
| C | Compliance |
| CAA | Clean Air Act |
| CAMU | Corrective Action Management Unit |
| CAP | Corrective Action Plan |
| CAS | Chemical Abstract Service |
| CDR | Commander |
| CELDS | Computer-Aided Environmental Legislative Data System |
| CEMS | Continuous Emissions Monitoring System |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response Compensation and Liability Act |
| CESQG | Conditionally Exempt Small Quantity Generator |
| CFC | Chlorofluorocarbons |
| CFR | Code of Federal Regulations |
| COTP | Captain of the Port |
| CT | Residual Disinfectant Concentration (C in CT calculation) |
| CWA | Clean Water Act |
| DC | District Commands |
| DENIX | Defense Environmental Network and Information Exchange |
| DERP | Defense Environmental Restoration Program |
| DIY | Do-It-Yourself |
| DOD | Department of Defense |
| DOI | Department of the Interior |
| DOT | Department of Transportation |
| DRE | Destruction and Removal Efficiency |
| DRMO | Defense Reutilization and Marketing Office |
| EA | Environmental Assessment |
| ECAS | Environmental Compliance Assessment System |

Glossary of Acronyms (continued)

| | |
|-------|--|
| ECC | Environmental Compliance Coordinator |
| EIS | Environmental Impact Statement |
| EM | Engineer Manual |
| EO | Executive Order |
| EP | Engineer Pamphlet |
| EPA | Environmental Protection Agency |
| EPC | Environmental Protection Committee |
| EPCRA | Emergency Planning and Community Right-to-Know Act |
| ER | Engineer Regulation |
| ERGO | Environmental Review Guide for Operations |
| ESA | Endangered Species Act |
| ETIS | Environmental Technical Information System |
| ETL | Engineer Technical Letter |
| FFCA | Federal Facilities Compliance Act |
| FIFRA | Federal Insecticide, Fungicide, and Rodenticide Act |
| FOF | Finding of Fact |
| FOTW | Federally-Owned Treatment Works |
| FNSI | Finding of No Significant Impact |
| FR | Federal Register |
| FUDS | Formerly Used Defense Sites |
| FWCA | Fish and Wildlife Conservation Act |
| FWS | Fish and Wildlife Service |
| FY | Fiscal Year |
| GGTP | Gamma (Glutamyl) Transpeptidase |
| GMP | Good Management Practice |
| HCFC | Hydrogenated Chlorofluorocarbons |
| HCL | Hydrogen Chloride |
| HOC | Halogenated Organic Compound |
| HPC | Heterotrophic Plate Count |
| HPMP | Historic Preservation Management Plan |
| HTRW | Hazardous, Toxic, and Radioactive Waste |
| HWM | Hazardous Waste Management |
| IAF | Induced Air Flotation |
| ID | Identification |
| IOPP | International Oil Pollution Prevention |
| IRP | Installation Restoration Program |
| ISCP | Installation Spill Contingency Plan |
| ISS | Interim Status Standards |
| LDR | Land Disposal Restriction |
| LPG | Liquid Petroleum Gas |

Glossary of Acronyms (continued)

| | |
|-------|--|
| MBtu | Million British thermal units |
| MCL | Maximum Contaminant Level |
| MCLG | Maximum Contaminant Level Goal |
| MDL | Minimum Detection Limit |
| MOA | Memorandum of Agreement |
| MOU | Memorandum of Understanding |
| MPN | Most Probable Number |
| MPT | Marine Portable Tanks |
| MSC | Major Subordinate Command |
| MSD | Marine Sanitation Device |
| MSDS | Material Safety Data Sheet |
| MSWLF | Municipal Solid Waste Landfill |
| MVAC | Motor Vehicle Air Conditioning |
| MTR | Materials Testing Report |
| MWC | Municipal Waste Combustor |
| NA | Not Applicable |
| NAAQS | National Ambient Air Quality Standards |
| NACE | National Association of Corrosion Engineers |
| NASA | National Aeronautics and Space Administration |
| NEPA | National Environmental Policy Act |
| NFPA | National Fire Prevention Association |
| NHPA | National Historic Preservation Act |
| NIOSH | National Institute of Occupational Safety and Health |
| NLS | Noxious Liquid Substance |
| NOI | Notice of Intent |
| NOV | Notice of Violation |
| NPDES | National Pollutant Discharge Elimination System |
| NRC | National Response Center |
| NSPS | New Source Performance Standards |
| NTP | National Toxicology Program |
| O&M | Operations and Maintenance |
| ODA | Ocean Dumping Act |
| OHSPC | Oil and Hazardous Substances Pollution Contingency (Plan) |
| OMB | Office of Management and Budget |
| OMP | Operational Management Plan |
| OPA | Oil Pollution Act |
| ORV | Off-Road Vehicle |
| OSC | On-Scene Coordinator |
| OSHA | Occupational Safety and Health Act |
| PCB | Polychlorinated Biphenyl |
| PL | Public Law |

Glossary of Acronyms (continued)

| | |
|-------|--|
| PMP | Pest Management Program |
| POC | Point of Contact |
| POC | Principal Organic Hazardous Constituent |
| POL | Petroleum, Oil, and Lubricants |
| POTW | Publicly Owned Treatment Works |
| PSD | Prevention of Significant Deterioration |
| PSES | Pretreatment Standards for Existing Sources |
| PSNS | Pretreatment Standards for New Indirect Sources |
| QA | Quality Assurance |
| RACM | Regulated Asbestos-Containing Material |
| RCRA | Resource Conservation and Recovery Act |
| RMA | Requires Management Action |
| RQ | Reportable Quantity |
| RSPA | Research and Special Programs Administration |
| SARA | Superfund Amendments and Reauthorization Act |
| SDWA | Safe Drinking Water Act |
| SGOT | Serum Glutamic Oxaloacetic Transaminase |
| SGPT | Serum Glutamic Pyruvic Transaminase |
| SHPO | State Historic Preservation Officer |
| SIP | State Implementation Plan |
| SOI | Secretary of the Interior |
| SOP | Standard Operating Procedure |
| SOUR | Specific Oxygen Uptake Rate |
| SPCC | Spill Prevention Control and Countermeasure (Plan) |
| SPDES | State Pollutant Discharge Elimination System |
| SQG | Small Quantity Generator |
| STB | Super Tropical Bleach |
| STP | Sewage Treatment Plant |
| SWMU | Solid Waste Management Unit |
| TCLP | Toxicity Characteristic Leaching Procedure |
| THM | Trihalomethane |
| TTHM | Total Trihalomethanes |
| TIM | Technical Information Manual |
| TM | Technical Manual |
| TMB | Technical Memorandum Bulletin |
| TNT | Ammonia Nitrate Explosive |
| TO | Technical Order |
| TPQ | Threshold Planning Quantity |
| TTO | Total Toxic Organics |
| TSCA | Toxic Substances Control Act |
| TSDF | Treatment, Storage, and Disposal Facility |
| TU | Temporary Unit |

Glossary of Acronyms (continued)

| | |
|---------|--|
| UDHM | dimethylhydrazine |
| UIC | Underground Injection Control (Plan) |
| UL | Underwriter's Laboratory |
| USACE | U.S. Army Corps of Engineers |
| USACERL | U.S. Army Construction Engineering Research Laboratories |
| USC | U.S. Code |
| USEPA | U.S. Environmental Protection Agency |
| USFWS | U.S. Fish and Wildlife Service |
| UST | Underground Storage Tank |
| VHAP | Volatile Hazardous Air Pollutant |
| VOC | Volatile Organic Compound |

Abbreviations

| | | | |
|-----------------|-------------------|-----------------|---------------------------------|
| bbl | barrel | μg | microgram |
| C | Celsius | μm | micrometer |
| cm | centimeter | min | minute |
| cm ² | square centimeter | MJ | MegaJoule |
| F | Fahrenheit | mo | month |
| ft | foot | mm | millimeter |
| ft ² | square feet | mrem | millirem |
| ft ³ | cubic feet | MW | MegaWatt |
| g | gram | ng | nanogram |
| gal | gallon | NTU | Nephelometric Turbidity Unit |
| gJ | gigaJoule | oz | ounce |
| h | hour | pCi | picoCuries |
| hp | horsepower | ppm | parts per million |
| in. | inch | psi | pounds per square inch |
| J | Joule | psia | pounds per square inch absolute |
| kg | kilogram | psig | pounds per square inch gauge |
| km | kilometer | s | second |
| kPa | kiloPascal | scf | standard cubic feet |
| L | liter | scm | standard cubic meters |
| lb | pound | V | volt |
| m | meter | yd | yard |
| m ³ | cubic meter | yd ² | square yard |
| mg | milligram | yr | year |
| mi | mile | | |

Chemicals

| | |
|-----------------|-----------------|
| CO | Carbon Monoxide |
| CO ₂ | Carbon Dioxide |
| Hg | Mercury |
| NO _x | Nitrogen Oxide |
| SO ₂ | Sulfur Dioxide |



CIVIL WORKS TRAINING GUIDE

| | CAA Asbestos Training (O & M) | CAA Asbestos Training (Construction) | CAA CFCs (Air Conditioner Servicing) |
|--------------------------|--|--|---|
| Applicability | Facilities with RACM (Small Scale) | Facilities with RACM (Large Scale) | Facilities with personnel who perform air condition- ing services |
| Who Must Be Trained | -Contract Inspectors/ Overseers -Removers/Workers Who Perform Asbestos Removal -Designers | -Contract Inspectors | Those who service motor vehicle air conditioners |
| When Must Training Occur | Before asbestos work begins | Before asbestos work begins | Requirements to be announced by EPA soon |
| Recordkeeping | Training records. Removal & disposal records. | Training records. Removal & disposal records. | Training/certification records on file |
| Citation | 29 CFR 1910.1001 40 CFR 61.145 | 29 CFR 1926.58 40 CFR 61.145 40 CFR 763, App E CB 91-19 | 40 CFR 82 |

| TSCA Lead Based Paint | Pesticides FIFRA | SDWA Water System Operator Certification | DOT |
|--|---|---|---|
| Facilities with LB Paint Removal Activities | Facilities that use or obtain services related to pesticides & herbicides | Facilities that operate community water systems or wastewater treatment facilities (POTWs) | Facilities involved in the transportation, shipment, or prep for shipment of hazardous materials |
| -Lead based paint removers -LBP contractor inspectors | -Applicators -Pesticide Contractor Inspectors | -Water System Operator | Employees involved in the transportation or shipment of hazardous materials/ wastes |
| Requirements to be announced by EPA | Before application | System Operators | Within 90 days after employment or new job assignment |
| Training records until facility closure. 3 yr on former employees. | Training records. Application/exposure records. | Certification and training records on file. | Written description of information, including cer- tification (49 CFR 172.704(d)) |
| 402 TSCA (14 USC 2682) | 40 CFR 171.9 | State regulations | 49 CFR 173.1(b) 49 C R 177.800(a) 49 C I R 177.816 49 C F 172.704 - 704 |

| RCRA (Generators) | OSHA Haz Comm | OSHA Haz Woper | CWCA/FWPCA/OPA Spill Prevention ... (SPCCP) |
|--|---|--|---|
| Facilities that generate 100 or more kilograms/month (SQGs/LQGs) | Facilities that handle hazardous chemicals | Facilities that may be involved in an emergency response operation involving the release of a hazardous substance | Facilities required to prepare an SPCC plan |
| Employees who handle hazardous waste | Employees who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies | Employees who participate or may be expected to participate, in emergency response; training based on level of involvement | Employees involved in the operation and maintenance of equipment that may discharge oil |
| For LQGs, within 6 mo after employment or new job assignment; must be supervised until trained. Annual refresher for SQGs, not specified | Initial assignment & when a new hazard is introduced to work area | Initial training prior to taking part in emergency response. Annual refresher. | Spill prevention briefings must be conducted "at intervals frequent enough to assure adequate understanding of SPCC Plan" |
| For LQGs, written job title & description; description of training required for each position; training documented. For SQGs, not specified. | Written description of employees information and training. Must be included in haz comm program. | Training or competency certification, including method used to demonstrate competency | Not required |
| 40 CFR 262.34(a)(4) 40 CFR 265.16 40 CFR 262.34(d)(5)(iii) | 29 CFR 1910.1200(b) | 29 CFR 1910.120(q) 29 CFR 1910.120(p) | 40 CFR 112.7(e)(10) |

U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA) POINTS OF CONTACT

Regional Offices

Region 1 (CT, ME, MA, NH, RI, VT)

Environmental Protection Agency
John F. Kennedy Federal Bldg.
Room 2203
Boston, MA 02203
(617) 565-3715

Region 2 (NJ, NY, Puerto Rico, Virgin Islands)

Environmental Protection Agency
26 Federal Plaza, Room 906
New York, NY 10278
(212) 264-2525

Region 3 (D.C., DE, MD, PA, VA, WV)

Environmental Protection Agency
841 Chestnut St.
Philadelphia, PA 19107
(215) 597-9800

Region 4 (AL, FL, GA, KY, MS, NC, SC, TN)

Environmental Protection Agency
345 Courtland St. N.E.
Atlanta, GA 30365
(404) 347-4727

Region 5 (IL, IN, MI, MN, OH, WI)

Environmental Protection Agency
230 S. Dearborn St.
Chicago, IL 60604
(312) 353-2000

Region 6 (AK, LA, NM, OK, TX)

Environmental Protection Agency
First Interstate Bank Tower at Fountain Place
1445 Ross Ave., Suite 1200
Dallas, TX 75202
(214) 655-2100

Region 7 (IA, KS, MO, NB)

Environmental Protection Agency
726 Minnesota Ave.
Kansas City, MO 66401
(913) 551-7006

Region 8 (CO, MT, ND, SD, UT, WY)

Environmental Protection Agency
999 18th St., Suite 500
Denver, CO 80202
(303) 293-1603

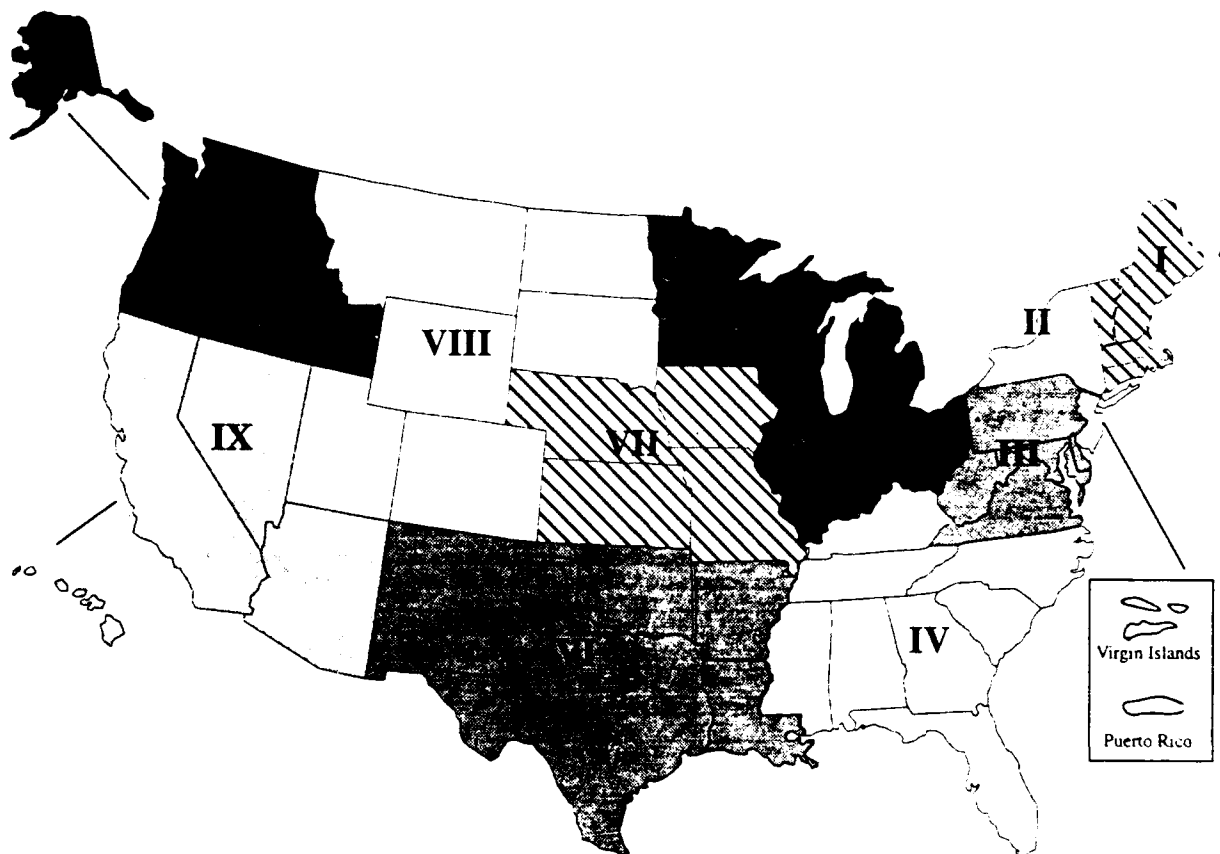
**Region 9 (AZ, CA, HI, NV, American Samoa, Guam,
Trust Territories of the Pacific)**

Environmental Protection Agency
75 Hawthorne St.
San Francisco, CA 94105
(415) 556-6322

Region 10 (AK, ID, OR, WA)

Environmental Protection Agency
1200 Sixth Ave.
Seattle, WA 98101
(206) 442-5810

USEPA REGION MAP



ENVIRONMENTAL INFORMATION HOTLINES

| OFFICE | PHONE NUMBER | OFFICE | PHONE NUMBER | OFFICE | PHONE NUMBER |
|---|--------------|---|--------------|---|--------------|
| Air Risk Hotline | 919-541-0888 | Environmental Protection Agency | 900-245-4505 | Small Business and Asbestos Ombudsman's Office, EPA | 800-368-5888 |
| <i>Information on health, exposure, and risk assessment with regard to toxic air pollutants.</i> | | <i>Agency for vendors treating groundwater, soil, sludge, sediments, and solid waste.</i> | | <i>Information of pollution prevention and recycling.</i> | |
| Bureau of Explosives Hotline | 202-639-2222 | Florida Center for Solid & Hazardous Waste Management | 800-348-1239 | Stratosphere Ozone Hotline, EPA | 800-296-1996 |
| <i>Offers assistance in hazardous materials incidents involving railroads and is often contacted through CHEMTREC.</i> | | <i>An electronic bulletin board for recyclers.</i> | | <i>Information on ozone protection regs and requirements under Title VI of the Clean Air Act Amendments of 1990 and other general aspects of stratosphere ozone depletion/protection.</i> | |
| Cancer Information Service Hotline | 800-422-6237 | Florida Leak Reporting Hotline | 904-488-3935 | Superfund Site Cleanup | 800-533-3508 |
| <i>Provides information on cancer risk and referrals to proper sources for local support services.</i> | | <i>For timely reporting of release of petroleum products into the soil (72 hrs).</i> | | <i>For questions on status of Superfund sites within Region VI (AR, LA, OK, NM, & TX).</i> | |
| CHEMTREC Hotline | 800-424-9300 | National Pesticide Telecommunications Network Hotline | 800-858-7378 | Superfund Technical Information | 800-346-5009 |
| <i>The Chemical Transportation Emergency Center will identify unknown chemicals, advise on response methods and procedures for chemicals and situations, provide help in contacting shippers/carriers/manufacturers/product response teams.</i> | | <i>Information regarding all aspects of pesticide handling.</i> | | <i>Superfund message center allowing caller to leave message.</i> | |
| Consumer Product Safety Commission | 800-638-2772 | Plastics Recyclers Information Line | 800-243-5790 | Toxic Substances (Asbestos) | 800-462-6706 |
| <i>Information on consumer safety and guidelines on what to do if you come in contact with formaldehyde, asbestos, lime, and air pollutants. Also provides product recall information.</i> | | <i>Information regarding plastic recycling locations according to area.</i> | | <i>Information on funding for asbestos cleanup projects.</i> | |
| Control Technology Center for Air Toxics | 919-541-0800 | Poison Control Center (National Capital) | 202-625-3333 | Toxic Substances Control Act Hotline | 202-554-1404 |
| <i>Provides information to state and local pollution control agencies on sources of emissions of air toxics.</i> | | <i>Provides info on exposure to chemicals, poisons, or drugs. (Operated by Georgetown Univ. Hospital. Collect calls accepted.)</i> | | <i>Information on Toxic Substance Control Act & Asbestos Technical Info & Referral.</i> | |
| Department of Transportation Hotline | 202-366-4488 | Public Information Hotline, EPA | 202-260-2080 | Hazardous Materials & Oil Spills, EPA | 800-424-8802 |
| <i>Information assistance pertaining to Federal regulations for transportation of hazardous materials, CFR 49.</i> | | <i>Will answer inquiries from the public about EPA and offers a variety of general, nontechnical information materials.</i> | | <i>National Response Center in the vein of hazardous materials spills.</i> | |
| Emergency Plan & Community Right-To-Know Hotline, EPA | 800-535-0202 | RCRA/Superfund, EPA | 800-231-3075 | Waste Reduction Assistance Program OER (FL) | 904-488-0300 |
| <i>EPA Title III requirements information.</i> | | <i>Right-to-know information for California, Arizona, Hawaii, & Nevada.</i> | | <i>Advice, information, and counseling services for pollution prevention.</i> | |
| Environmental Defense Fund Recycling Hotline | 212-505-2100 | RCRA/Superfund/UST Hotline | 800-424-9346 | Wetlands Protection Hotline, EPA | 800-832-7828 |
| <i>Recycling information and locations.</i> | | <i>Answers questions concerning the Resource Conservation and Recovery Act, Superfund, Underground Storage Tanks and hazardous waste regulations.</i> | | <i>Information regarding values of wetlands and efforts for wetlands protection.</i> | |
| | | Safe Drinking Water Hotline | 800-426-4791 | Whistle Blower Hotlines, EPA | 800-424-4000 |
| | | <i>Information on policy and regulations regarding public water supply programs.</i> | | <i>Allows for reporting of fraud, waste, and abuse in EPA programs.</i> | |

* Information consolidated and printed by the Resource Center. For information on additional training resources, call or fax. 9307.04a

ERGO

Environmental Review Guide for Operations

PREASSESSMENT ENVIRONMENTAL MANAGEMENT QUESTIONNAIRE

This questionnaire will provide background information necessary to plan and conduct an environmental compliance assessment. References provided in this questionnaire are to assist in answering the questionnaire and are not intended to be all-inclusive. Refer to the Major Activities/Operations Table to determine where activities/operations overlap into several different areas.

Name of Facility: _____

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

SECTION 1. Air Emissions Management:

1. Does the facility operate a fuel burner (central steam plant, or hot water or hot water steam boiler)?

If **YES** how large and what fuel is used? See ERGO items 1-4 through 1-7.

Size

Fuel

2. Does the facility operate an incinerator? How large? _____

If **YES** see ERGO item 1-3.

3. Does the facility dispense, store, or transfer gasoline?

Types: _____

If **YES** see ERGO items 1-8 through 1-13.

4. Does the facility operate printing presses?

If **YES** see ERGO item 1-14.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

5. Does the facility store petroleum in aboveground storage tanks (ASTs)? What is the size of the largest tank? _____

_____ If **YES** see ERGO items 1-15 and 1-16.

6. Does the facility store volatile organic liquids in ASTs?

_____ If **YES** see ERGO items 1-17 and 1-18.

7. Does the facility conduct open burning (i.e., burn trash, plant waste or other solid waste)?

_____ If **YES** see ERGO item 1-19.

8. Does the facility have fugitive emissions from volatile hazardous air pollutant (VHAP) equipment (currently VHAPs include vinyl chlorides and benzene)?

_____ If **YES** see ERGO items 1-20 through 1-26.

9. Does the facility use volatile organic compound (VOC) based solvent degreasers?

_____ If **YES** see ERGO item 1-3.

10. Does the facility procure/use chlorofluorocarbon (CFC) or halon based substances?

_____ If **YES** see ERGO items 1-27 and 1-28.

11. Does the facility repair any units containing refrigerant?

_____ If **YES** see ERGO items 1-29 through 1-48.

12. Does the facility recycle/reclaim CFCs or halons?

_____ If **YES** see ERGO items 1-35, 1-39, and 1-40.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

SECTION 2. Cultural and Historic Resources Management:

1. Does the facility have any properties under its jurisdiction?

_____ If **YES** see
ERGO items 2-1
through 2-10.

2. Does the facility have cultural resources? List the facility's
cultural resources below:

_____ If **YES** see
ERGO items 2-7
through 2-10.

3. Is the facility's master plan or operational management
plan (OMP) a public document?

_____ If **YES** see
ERGO item 2-11
through 2-14.

4. Does the facility have an operational project?

_____ If **YES** see
ERGO item 2-
15.

5. Does the facility have any Native American graves or artifacts, or
have any been discovered during an operation?

_____ If **YES** see
ERGO item 2-
17.

6. Does the facility have an archeological or historical collection?

_____ If **YES** see
ERGO items 2-
18 through 2-29.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

SECTION 3. Hazardous Materials Management:

1. Does the facility store any hazardous materials such as paints, solvents, and pesticides? Please list types below.

Types: _____

If **YES** see
ERGO items 3-4
through 3-10 and
3-17 through 3-
22.

2. Have there been any releases or spills of hazardous substances at the facility?

If **YES** see
ERGO items 3-
11 through 3-13.

3. Are there any extremely hazardous substances at the facility?

If **YES** see
ERGO item 3-
14.

4. Does the facility: have extremely hazardous substances in excess of 500 lb or the threshold planning quantity (TPQ) (see Appendix 3-1); have cumulative use of hazardous chemicals in excess of 10,000 lb annually?

If **YES** see
ERGO items 3-
16.

5. Does the facility store flammable/combustible liquids (i.e., paints, solvents) in lockers, storage sheds, tanks, or industrial areas?

If **YES** see
ERGO items 3-
27 through 3-49.

6. Does the facility store compressed gases (i.e., oxygen, acetylene)?

If **YES** see
ERGO items 3-
50 through 3-53.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

7. Does the facility store acids?

If **YES** see
ERGO item 3-
54.

8. Does the facility store hazardous materials in laboratories?

If **YES** see
ERGO items 3-
23 through 3-26.

9. Does the facility transport hazardous material, or offer such materials for transport?

If **YES** see
ERGO item 3-
55.

SECTION 4. Hazardous Waste Management:

1. Is the facility a generator of hazardous waste?

If **YES** see
ERGO items 4-5
through 4-11.

a. Is the facility a small quantity generator (SQG) (i.e., generates less than 1000 kg [2204.62 lb] of hazardous waste but more than 100 kg [220.46 lb] in 1 mo)?

If **YES** see
ERGO items 4-
19 through 4-34.

b. Is the facility a conditionally exempt small quantity generator (CESQG) (i.e., generates less than 100 kg [220.46 lb] of hazardous waste in 1 mo)?

If **YES** see
ERGO item 4-15
through 4-18.

c. Is the facility a generator which generates more than 1000 kg [2204.63 lb] of waste in 1 mo)?

If **YES** see
ERGO item 4-35
through 4-71.

Complete the following section before proceeding.

Any waste listed in 40 CFR 261, which is not excepted or exhibits any of the following characteristics, is considered to be a hazardous waste:

- Ignitability (flashpoint less than 140 °F)
- Corrosivity (pH less than 2 or greater than 12.5)
- Toxicity Characteristic Leaching Procedure (TCLP) Toxicity (for As,Ba,Cd,Cr,Pb,Hg,Se,Ag, and selected pesticides)
- Reactive.

The following are hazardous wastes typically found at a facility:

| CHECK IF USED AT THIS FACILITY | Generated Volume/month | | Accumulated Volume | |
|---|------------------------|----------------------|----------------------|----------------------|
| | lb | kg | lb | kg |
| <input type="checkbox"/> * Solvents | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Liquid paint | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Paint stripper, remover, or thinner | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Spray paint booth air filters | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Pesticides, insecticides, herbicides, etc. | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> NBC filters and test kits | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> DS2 (diethylene triamine) | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Super topical bleach (STB) | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Ordnance, ammunition, explosives & residues | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Battery acid & caustics (in unserviceable batteries) | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Some pharmaceuticals | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Petroleum, oil, and lubricant (POL) tank farm fuel system filters | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> De-icing solution | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Printing ink, ink solvents, and cleaners | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Absorbent materials and soil contaminated with hazardous waste | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| <input type="checkbox"/> Other <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |

| CHECK IF USED AT THIS FACILITY | Generated Volume/month | | Accumulated Volume | |
|--------------------------------|------------------------|-------|--------------------|-------|
| | lb | kg | lb | kg |
| Other _____ | _____ | _____ | _____ | _____ |
| Other _____ | _____ | _____ | _____ | _____ |
| TOTAL | _____ | _____ | _____ | _____ |

* e.g., Trichlorethane, Methylene, chloride, Tetrachloroethylene, 1,1,1 Trichloroethane, Carbon Tetrachloride, Chlorinated Fluorocarbons, Toluene, MEK, Break-free in liquid form, Mineral Spirits, Xylene

| QUESTION/DESCRIPTION | RESPONSE | REFERENCE |
|--|----------|---|
| 3. Does the facility transport hazardous waste? | _____ | If YES see ERGO items 4-72 through 4-76. |
| 4. Does the facility have a treatment, storage, or disposal facility (TSDF)? | _____ | If YES see ERGO items 4-77 through 4-143. |
| a. Does the facility have a permitted TSDF? | _____ | If YES see ERGO item 4-144 through 4-156. |
| b. Does the facility have an interim status TSDF? | _____ | If YES see ERGO items 4-157 through 4-164. |
| 5. Does the facility incinerate hazardous waste? | _____ | If YES see ERGO items 4-165 through 4-168. |
| 14. Does the facility generate or dispose of restricted wastes? | _____ | If YES see ERGO items 4-174 through 4-183. |

QUESTION/DESCRIPTION**RESPONSE****REFERENCE****SECTION 5. Natural Resources Management:**

1. Does the facility have any construction projects (or had in previous 5 yr?

_____ If **YES** see
ERGO items 5-
16 through 5-20.

2. Does the facility operate a water resource project?

_____ If **YES** see
ERGO item 5-5.

3. Does the facility have land management responsibilities?

_____ If **YES** see
ERGO items 5-7
through 5-9.

4. Does the facility have floodplains or wetlands?

_____ If **YES** see
ERGO item 5-
10.

5. Does the facility have a forest?

_____ If **YES** see
ERGO items 5-
11 and 5-12.

6. Does the facility contain a shoreline?

_____ If **YES** see
ERGO item 5-
13.

7. Does the facility have endangered or threatened species?

_____ If **YES** see
ERGO items 5-
14 and 5-15.

SECTION 6. Pesticide Management:

1. Do facility personnel engage in the application of pesticides?

_____ If **YES** see
ERGO items 6-8
through 6-14.

2. Does the facility use contractor personnel in the application of pesticides?

_____ If **YES** see
ERGO item 6-8
through 6-12.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

3. Does the facility store, mix, or formulate pesticides?

If **YES** see
ERGO item 6-15
through 6-22.

4. Does the facility store/use pesticides classified highly toxic or moderately toxic (bearing **DANGER**, **POISON**, **WARNING**, or the skull and crossbones symbol)?

If **YES** see
ERGO items 6-
23 through 6-30.

5. Does the facility dispose of pesticides?

If **YES** see
ERGO items 6-
31 through 6-36.

SECTION 7. POL Management:

1. Does the facility have a current spill prevention, control, and countermeasure (SPCC) Plan?

If **YES** see
ERGO item 7-
13.

2. Have there been any discharges of oil at the facility?

If **YES** see
ERGO items 7-
14 and 7-15.

3. Does the facility have spill/discharge cleanup equipment on hand?

If **YES** see
ERGO item 7-
16.

4. Does the facility have any bulk storage tanks over 660 gal [2498.37 L]?

If **YES**, see
ERGO item 7-17
and 7-20.

5. Does the facility use dikes as a means of containment for petroleum storage tanks?

If **YES** see
ERGO items 7-
17 through 7-19.

QUESTION/DESCRIPTION**RESPONSE****REFERENCE**

6. Does the facility have any pipelines?

If **YES** see
ERGO items 7-
21 through 7-31.

7. Does the facility dispense gasoline and/or operate a service station?

If **YES** see
ERGO items 7-
32 through 7-35.

8. Does the facility have used oil?

If **YES**, see
ERGO item 7-37
through 7-79.

SECTION 8. Solid Waste Management:

1. Does the facility collect or store solid waste onsite?

If **YES**, see
ERGO items 8-4
through 8-16.

2. Does the facility contract out the collection of its solid waste?

If **YES**, see
ERGO items 8-6
through 8-13.

3. Does the facility recycle and reduce solid waste?

Types of recycling _____

If **YES** see
ERGO item 8-
17.

a. Does the facility have over 100 office workers?

If **YES** see
ERGO item 8-
18.

b. Do more than 500 families reside at the facility?

If **YES** see
ERGO item 8-
19.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

c. Does the facility generate waste corrugated containers?

Approximately how much per month? _____

_____ If **YES** see
ERGO item 8-
20.

4. Does the facility have land disposal onsite?

_____ If **YES** see
ERGO items 8-
21 through 8-43.

a. Does the facility dispose of water treatment plant sludges?

_____ If **YES** see
ERGO item 8-
23.

b. Does the facility dispose of incinerator or air pollution control residues?

_____ If **YES** see
ERGO item 8-
24.

c. Does the facility accept bulky wastes?

_____ If **YES** see
ERGO item 8-
22.

d. Does the facility accept special wastes?

_____ If **YES** see
ERGO items 8-
21, 8-26, and 8-
27.

5. Does the facility have a closure site?

_____ If **YES**, see
ERGO items 8-
44 and 8-45.

6. Does the facility have a construction debris landfill?

_____ If **YES**, see
ERGO items 8-
25 through 8-45.

7. Does the facility have a new landfill site?

_____ If **YES**, see
ERGO items 8-
46 through 8-47.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

8. Does the facility handle or dispose of medical waste?

If **YES** see
ERGO item 8-49
through 8-54.

SECTION 9. Special Pollutants Management:

1. Does the facility have polychlorinated biphenyls (PCBs) of any kind?

If **YES**, see
ERGO items 9-4
through 9-11.

Types

Quantities

2. Does the facility have PCB Transformers?

If **YES**, see
ERGO items 9-
12 through 9-19.

4. Does the facility have PCB Items (PCB-contaminated heat transfer or hydraulic systems, electromagnets, switches, voltage regulators, capacitors, circuit breakers, reclosers, or cables)?

If **YES** see
ERGO items 9-
23 through 9-26.

5. Does the facility use PCBs in research?

If **YES** see
ERGO item 9-
27.

6. Has the facility had a PCB spill?

If **YES**, see
ERGO items 9-
20 through 9-22.

7. Does the facility store PCBs?

If **YES** see
ERGO items 9-
28 through 9-32.

8. Does the facility transport PCBs or PCB Items?

If **YES** see
ERGO items 9-
33 and 9-34.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

9. Does the facility dispose of PCBs or PCB Items?

If **YES** see
ERGO items 9-
35 through 9-46.

10. Has the facility been surveyed for asbestos?

If **YES** see
ERGO item 9-
47.

11. Does the facility demolish, renovate, or strip components from
structures containing friable asbestos?

Is sampling done? _____
Current concerns? _____

If **YES** see
ERGO items 9-
48 through 9-57.

12. Does the facility dispose, or transport for disposal, asbestos
or asbestos-containing waste?

If **YES** see
ERGO items 9-
58 through 9-61.

13. Is the facility located in an area with a potential radon problem?

If **YES** see
ERGO items 9-
62 through 9-64.

14. Does the facility have any possible sources of noise pollution, or
have a noise hazardous area?

If **YES** see
ERGO items 9-
65 and 9-66.

SECTION 10. Underground Storage Tank (UST) Management:

1. Does the facility have any substandard USTs?

If **YES**, see
ERGO item 10-
4.

2. Does the facility have any new or upgraded USTs (after May 1986)?

If **YES** see
ERGO item 10-5
through 10-9.

QUESTION/DESCRIPTION

RESPONSE

REFERENCE

3. Has the facility repaired, or is it planning to repair, a UST?

If **YES** see
ERGO item 10-
14 and 10-15.

4. Does the facility have hazardous substance USTs?

If **YES** see
ERGO item 10-
26.

5. Does the facility have a deferred UST?

If **YES** see
ERGO item 10-
27.

6. Does the facility have a metallic UST?

If **YES** see
ERGO items
10-10.

7. Have facility USTs undergone a change of service, or closure?

If **YES** see
ERGO items
10-30 through
10-36.

8. Does the facility have any USTs that were emptied of their contents and abandoned in place?

If **YES** see
ERGO item 10-
32.

9. Does the facility have any heating oil USTs?

If **YES** see
ERGO item 10-
11.

QUESTION/DESCRIPTION

RESPONSE REFERENCE

SECTION 11. Wastewater Management:

1. Does the facility have any point source discharges?

_____ If **YES** see
ERGO item 11-
5.

2. Does the facility have a national pollutant discharge elimination system (NPDES) or state pollutant discharge elimination system (SPDES) permit?

_____ If **YES** see
ERGO items
11-5 through
11-9.

3. Does the facility have stormwater discharge not covered by a NPDES permit?

_____ If **YES** see
ERGO item 11-
10.

4. Does the facility discharge to a wastewater treatment plant?

_____ If **YES** see
ERGO items
11-11 through
11-13.

5. Does the facility operate a wastewater treatment plant?

_____ If **YES** see
ERGO items
11-14 through
11-16.

6. Does the facility have electroplating operations?

_____ If **YES** see
ERGO item 11-
17 through 11-
23.

7. Does the facility operate metal finishing operations?

_____ If **YES** see
ERGO items
11-24 through
11-28.

8. Does the facility operate any washracks?

_____ If **YES** see
ERGO item 11-
12.

QUESTION/DESCRIPTION**RESPONSE****REFERENCE**

9. Does the facility conduct or issue permits for dredging operations?

If **YES** see
ERGO items
11-29 through
11-35.

10. Does the facility do land application of sludge?

If **YES** see
ERGO item 11-
36 through 11-
75.

11. Does the facility incinerate sludge?

If **YES** see
ERGO items
11-76 through
11-83.

SECTION 12. Water Quality Management:

1. Does the facility treat, store, and distribute its own drinking water?

If **YES** see
ERGO item
12-11 through
12-63.

2. Does the facility perform contaminant monitoring on its water supply?

If **YES** see
ERGO items
12-20 through
12-39.

3. Does the facility provide disinfection/filtration for water?

If **YES** see
ERGO items
12-40 through
12-47.

4. Is the facility located near a sole source aquifer?

If **YES** see
ERGO item 12-
64.

5. Does the facility have recreational potable water sources?

If **YES** see
ERGO item 12-
65.

QUESTION/DESCRIPTION**RESPONSE****REFERENCE**

6. Does the facility have swimming beaches?

If **YES** see
ERGO item 12-
66.

7. Does the facility have swimming pools?

If **YES** see
ERGO items
12-67.

8. Is the facility authorized to provide emergency drinking water?

If **YES** see
ERGO item 12-
68.

SECTION 13. Floating Plant Management

1. Does the facility have or operate any floating plant?

What types? _____

If **YES** see
ERGO items
13-1 through
13-51.

2. Does the facility accept hazardous waste from floating plant?

If **YES** see
ERGO item 13-
51.

Signature of individual completing this form: _____

Date completed: _____

ATTENTION: The following records should be available for review by the assessment team either prior to the assessment or immediately upon arrival at the facility.

(NOTE: Not all facilities will have, or are even required to have, all of the following documents.)

General

1. Detailed maps of the facility indicating street names and building numbers. Enough for one for every member of the assessment team.
2. A phone list.
3. Copies of notices of violation (NOVs) issued to the facility in any of these areas.

Air Emissions Management

1. Air emissions inventory.
2. All air related permits.
3. A list of steam generating units and boilers and their size, fuel used, and locations.

Cultural and Historic Resources Management

1. Any cultural or archeological resources surveys.
2. Management plans for cultural and archeological resources.
3. A list of properties nominated for the National Register.

Hazardous Materials Management

1. A list of hazardous material storage/use areas.
2. A waste minimization plan.
3. MSDSs.
4. Documentation of personnel training.
5. The OHSPC Plan.
6. A copy of any reports of spills.
7. Copies of the Tier I or Tier II reports.
8. Documentation on contaminated sites.
9. Copies of the USEPA Form R, *Toxic Chemical Release Inventory Reporting Form*.

Hazardous Waste Management

1. The Hazardous Waste Management Plan.
2. A list of hazardous wastes generated at the facility.
3. A list of waste generation/storage areas.
4. USEPA ID No.
5. Manifests.
6. Any permits.
7. The biennial report.
8. Personnel training records.

Natural Resources Management

1. The endangered species survey.
2. The Natural Resources Management Plan.
3. Any land management plans
4. Recent EAs, EISs, FNSIs or Notices of Intent (NOIs).

Pesticide Management

1. The Pesticide Management Plan.
2. A list of pesticide storage sites.
3. Application records.
4. MSDSs for pesticides.
5. Personnel Certifications for applicators.
6. Contracts for pesticide application.

POL Management

1. The SPCC plan.
2. A list of POL storage areas.

Solid Waste Management

1. Any contracts with waste haulers.
2. Any recycling plans.
3. All documentation pertaining to landfill operation or closure.
4. Records on groundwater sampling resulting from monitoring wells.
5. Records of sludge testing prior to land application of sludge.

Special Pollutants Management

1. The PCB inventory.
2. The PCB annual report.
3. The results of the asbestos survey.
4. The Asbestos Management Plan.
5. Noise complaints.
6. Radon survey results.

Underground Storage Tank (UST) Management

1. Upgrading and/or closure plans.
2. A list of all USTs and their locations.
3. Release detection documentation.
4. Integrity test results.
5. Site contamination reports after tank removals.

Wastewater Management

1. All NPDES/SPDES permits.
2. Maps of the storm, sanitary, and industrial sewers.
3. A copy of pretreatment standards imposed on the facility.
4. A list of maintenance shops/operations to include wash facilities.
5. Locations of holding ponds, sedimentation pits, and open/end-of-pipe discharge points.

Water Quality Management

1. Copies of drinking water test results.
2. Copies of reports to the state.

Floating Plant Management

1. Copies of the Operations Manuals.
2. MSDSs.
3. Spill Plans.
4. Training Records.

Major Activities/Operations at USACE Projects, Facilities, and Related Sections

| SECTIONS | | | | |
|--|--------------------------------|--|--------------------------------------|----------------------------------|
| Major Activities/ Operations | 1 Air Emissions Mgmt. | 2 Cultural and Historic Resources | 3 Hazardous Materials Mgmt. | 4 Hazardous Waste Mgmt. |
| 1. Incinerators | • | | | • |
| 2. Heat/Power Production | • | | | • |
| 3. Fuel Storage | • | | • | |
| 4. Sanitary Wastewater | | | | |
| 5. Stormwater Runoff | | | • | |
| 6. Sludge Disposal | • | | | |
| 7. POL Dispensing | | | | |
| 8. Wastewater Treatment | | | | |
| 9. Vehicle Maintenance | • | | • | • |
| 10. Shop Activities | • | | • | • |
| 11. Solid Waste Generation | | | | |
| 12. Water Supply | | | | |
| 13. Toxic/Hazardous Materials Use and Storage | | | • | |
| 14. Firefighting Training | • | | | |
| 15. PCB Electrical Equipment | | | | |
| 16. Pesticide/ Herbicide Use | | | | |
| 17. Environmental Noise | | | | |
| 18. Emergency Planning | | | • | |
| 19. Asbestos Removal | | | | |
| 20. Underground Storage Tanks | | | • | |
| 21. Remodeling Activities | | • | | |
| 22. Construction Activities | | • | | |
| 23. Soil Removal | | • | | |
| 24. Marine O&M Activities | | | | |
| 25. Geotechnical Activities | • | | • | • |
| 26. Sandblasting and Painting | • | | | |
| 27. Reproduction and Photo Developing | | | | |
| 28. Pumping Plant O&M Activities | | | | |
| 29. Lock and Dam O&M Activities | | | | |
| 30. Aircraft/Airstrip Operation and Maintenance | | | | |
| 31. Warehousing and Property Management | | | | |
| 32. Stream Gauging Activities | | | • | |
| 33. Microwave/Radio Towers | | | • | |
| 34. Mining/Drilling Operations | | | • | • |
| 35. Utility Transmission Facilities | | | • | |
| 36. Fee-Owned Confined Disposal Facilities (CDFs) | • | • | | |
| 37. Fish Hatcheries/Labs | | | • | • |
| 38. Laboratories | • | | • | • |

Major Activities/Operations at USACE Projects, Facilities, and Related Sections

| SECTIONS | | | | |
|--|------------------------------------|-------------------------|-------------------|------------------------------|
| Major Activities/ Operations | 5 Natural Resources Mgmt. | 6 Pesticide Mgmt. | 7 POL Mgmt. | 8 Solid Waste Mgmt. |
| 1. Incinerators | | | | • |
| 2. Heat/Power Production | • | • | • | • |
| 3. Fuel Storage | | | • | |
| 4. Sanitary Wastewater | | | | |
| 5. Stormwater Runoff | • | • | • | |
| 6. Sludge Disposal | | | | • |
| 7. POL Dispensing | | | • | |
| 8. Wastewater Treatment | | | | • |
| 9. Vehicle Maintenance | | | • | • |
| 10. Shop Activities | | • | • | • |
| 11. Solid Waste Generation | • | | | • |
| 12. Water Supply | | | | |
| 13. Toxic/hazardous Materials Use | | • | | |
| 14. Firefighting Training | | | • | |
| 15. PCB Electrical Equipment | | | | |
| 16. Pesticide/ Herbicide Use | • | • | | • |
| 17. Environmental Noise | • | | | |
| 18. Emergency Planning | | • | • | |
| 19. Asbestos Removal | | | | |
| 20. Underground Storage Tanks | | | • | • |
| 21. Remodeling Activities | • | | | • |
| 22. Construction Activities | • | • | • | • |
| 23. Soil Removal | • | | | |
| 24. Marine O&M Activities | | • | • | • |
| 25. Geotechnical Activities | | | • | • |
| 26. Sandblasting and Painting | | | • | • |
| 27. Reproduction and Photo Developing | | | | • |
| 28. Pumping Plant O&M Activities | • | • | • | • |
| 29. Lock and Dam O&M Activities | • | • | • | • |
| 30. Aircraft/Airstrip Operation and Maintenance | | | • | • |
| 31. Warehousing and Property Management | | • | • | • |
| 32. Stream Gauging Activities | • | | | |
| 33. Microwave/Radio Towers | • | | | |
| 34. Mining/Drilling Operations | • | | • | • |
| 35. Utility Transmission Facilities | • | | | |
| 36. Fee-Owned CDFs | • | • | | |
| 37. Fish Hatcheries/Labs | | • | • | • |
| 38. Laboratories | | • | • | • |

Major Activities/Operations at USACE Projects, Facilities, and Related Sections

| SECTIONS | | | | | |
|--|-------------------------------------|--------------------|---------------------------|---------------------------------|----------------------------------|
| Major Activities/ Operations | 9 Special Pollutants Mgmt. | 10 UST Mgmt. | 11 Wastewater Mgmt. | 12 Water Quality Mgmt. | 13 Floating Plant Mgmt. |
| 1. Incinerators | | | | | • |
| 2. Heat/Power Production | | | • | | |
| 3. Fuel Storage | | | | | • |
| 4. Sanitary Wastewater | | | • | | • |
| 5. Stormwater Runoff | | | • | | |
| 6. Sludge Disposal | | | • | | |
| 7. POL Dispensing | | | | | • |
| 8. Wastewater Treatment | | | • | | • |
| 9. Vehicle Maintenance | | | | | |
| 10. Shop Activities | | | • | | • |
| 11. Solid Waste Generation | | | | | |
| 12. Water Supply | | | | • | • |
| 13. Toxic/Hazardous Materials Use | • | | | | • |
| 14. Firefighting Training | | | • | | |
| 15. PCB Electrical Equipment | • | | | | • |
| 16. Pesticide/ Herbicide Use | | | | | • |
| 17. Environmental Noise | • | | | | • |
| 18. Emergency Planning | | | | | |
| 19. Asbestos Removal | • | | | | |
| 20. Underground Storage Tanks | | • | | | |
| 21. Remodeling Activities | • | | | | |
| 22. Construction Activities | • | | | | • |
| 23. Soil Removal | | | | | • |
| 24. Marine O&M Activities | | | | | |
| 25. Geotechnical Activities | | | | | |
| 26. Sandblasting and Painting | | | | • | |
| 27. Reproduction and Photo Developing | | | | | |
| 28. Pumping Plant O&M Activities | | | | | |
| 29. Lock and Dam O&M Activities | | | | | |
| 30. Aircraft/Airstrip Operation and Maintenance | | | | | |
| 31. Warehousing and Property Management | | | | | |
| 32. Stream Gauging Activities | | | • | • | |
| 33. Microwave/Radio Towers | | | • | • | |
| 34. Mining/Drilling Operations | | | | | |
| 35. Utility Transmission Facilities | | | | | |
| 36. Fee-Owned CDFs | | | • | • | |
| 37. Fish Hatcheries/Labs | • | • | • | | |
| 38. Laboratories | | | • | • | |

Section 1

Air Emissions Management

SECTION 1

AIR EMISSIONS MANAGEMENT

A. Applicability

This section includes regulations, responsibilities, and compliance requirements associated with air pollution emissions from equipment and vehicles at Corps facilities. The major sources of air pollution emissions at Corps facilities are:

- Particulates, SO₂, and NO_x from fuel burning at steam and hot water generation plants and boilers.
- Particulates and gases produced by maintenance operations such as controlled burns, debris removal, and spill cleanup.
- The emission of volatile organic compound (VOC) vapors from the storage and transfer of certain petroleum fuels and chemicals (solvents), and the operation of degreasers and other processes (paint stripping and metal finishing) that use solvents.
- The emission of CO from vehicles operated on the facility.

Most Corps facilities have air emissions sources in one or more of these categories. Therefore, this section is applicable to some extent at all Corps facilities and projects.

Additional sources of air emissions such as steam generating units with greater than 29 MW (100 million British thermal units (MBtu)) heat input are not included in this manual due to the minimal number of such facilities on Corps property. If the facility being assessed has air emissions sources that fall within this range, refer to the U.S. Environmental Compliance Assessment System (ECAS) manual for pertinent checklist items.

B. Federal Legislation

- *The Clean Air Act Amendments of 1990*. This Act, Public Law (PL) 101-549 (42 U.S. Code (USC) 7401-7671q), is currently the effective, comprehensive

Federal legislation regulating the prevention and control of air pollution. The purposes of this Act are to:

1. protect and enhance the quality of the nation's air resources so as to promote the public health and welfare and the productivity of its population
2. initiate and accelerate a national research and development program to achieve the prevention and control of air pollution
3. provide technical and financial assistance to state and local governments regarding the development and execution of their air pollution prevention and control efforts
4. encourage and assist the development and operation of regional air pollution prevention and control programs (42 USC 7401(b))
5. achieve a substantial reduction in emission of hazardous air pollutants from area sources and an equivalent reduction in the public health risks associated with such sources including a reduction of not less than 75 percent in the incidence of cancer attributable to emissions from such sources (42 USC 7412(k)(1))
6. reduce the adverse effects of acid deposition through reductions in annual emissions of SO₂ from 1980 emission levels, and of NO_x emissions from 1980 emission levels, in the 48 contiguous states and the District of Columbia and to bring about such reductions by requiring affected sources to comply with prescribed emission limitations by specified deadlines. Limitations may be met through alternative methods of compliance provided by an emission allocation and transfer system
7. encourage energy conservation, use of renewable and clean alternative technologies, and pollution prevention as a long-range strategy, consistent with the provisions of this Act, for reducing air pollution and other adverse impacts of energy production and use (42 USC 7651(b)).

A primary goal of this Act is to encourage or otherwise promote reasonable Federal, state, and local government actions for pollution prevention (42 USC 7401(c)).

Each department, agency, and instrument of the executive, legislative, and judicial branches of the Federal government, and each officer, agent, or employee of such a unit must comply with all Federal, state, interstate, and local requirements, administrative authority, processes, and sanctions respecting the control and abatement of air pollution in the same manner, and to the same extent, as any nongovernment entity. This applies to (42 USC 7418(a)):

1. any requirement, whether substantive or procedural (including record-keeping, reporting, and emission)
2. any requirement to pay a fee or charge imposed by any state or local agency to defray the costs of its air pollution regulatory program

3. the exercise of any Federal, state, or local administrative authority, and
4. any process and sanction, whether enforced in Federal, state, or local courts or in any other manner.

Each department, agency, or instrument of the Federal government must not engage in, support in any way, provide financial assistance for, license, permit, or approve, any activity that does not conform to an implementation plan after it has been approved or passed under this Act. Any Federal agency may not approve, accept, or fund any transportation plan, program, or project unless such plan, program or project has been found to conform to any applicable implementation plan in effect (42 USC 7506(c)(1)(2)).

If the President determines it to be in the paramount interest of the United States, he may exempt from compliance, with the requirements of this Act, any weaponry, equipment, aircraft, vehicles, or other classes or categories of property that are owned or operated by the Armed Forces of the United States and that are uniquely military in nature (42 USC 7418(b)).

C. State/ Local Regulations

The primary mechanisms regulating air pollutant emissions are the state or air quality control region (AQCR) regulations. These regulations will normally follow the Federal guidelines for state programs and will have many similar features. However, depending on the type and degree of air pollutant problems within the state/region, the individual regulations will vary. For example, photochemical oxidant (ozone) problems are widespread in California; therefore, the individual AQCRs in that state have stringent VOC emission requirements. The state of North Dakota has no such problem and, therefore, has fewer and less stringent VOC regulations.

New source performance standards (NSPSs) are established for particular pollutants in industrial categories based upon adequately demonstrated control technology. A permit is normally required for new, expanded, or modified sources of air pollutants.

Some state regulations apply directly to some facilities and operations without requiring a permit. At a minimum, state regulations should be reviewed for the following activities:

1. fugitive dust emissions
2. control of particulate emissions from the transportation of refuse or materials in open vehicles
3. certification requirements for boiler operators
4. emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators
5. open burning
6. vehicle exhaust emissions testing
7. spray painting of vehicles, buildings, and/or furniture
8. certification of vehicles transporting VOC liquids
9. paving of roads and parking lots
10. toxic air pollutants
11. operation of cold cleaners, degreasers, and open top vapor degreasers
12. vapor control requirements for fuel pumps.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, lands, and waters at Civil Works Projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.
- Engineering Manual (EM) 385-1-1, *Safety and Health Requirements*. Although this is a manual and not an ER, the contents are applicable to all missions under the command of the Chief of Engineers, whether accomplished by military, civilian, or contractor forces. In relation to air quality, it prohibits specific types of materials for use as dust suppressants.
- DOD Directive 6050.9, *Chlorofluorocarbons (CFCs) and Halons*. This directive instructs DOD facilities that procure CFCs and halons to submit the annual CFC and Halon Report.

E. Key Compliance Requirements

- **Steam Generating Units** - Steam generating units that started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to limit emissions of SO₂ and particulates. Discharge rates are to be monitored and, if there is no monitoring system, fuel

is required to be sampled prior to combustion. Facilities are required to submit excess emission reports for any calendar quarter in which it exceeds opacity limits. If a facility does not exceed the limits in a given year, it is required to file semiannual reports confirming this fact. Facilities required to meet SO₂ emission limits are also required to submit quarterly reports (40 Code of Federal Regulations (CFR) 60.40c, 60.42c, 60.43c, and 60.46c through 60.48c).

- Gasoline Dispensing - Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline. Fuel pumps are required to display signs stating the type of fuel in each pump and that only unleaded gas can be introduced into labeled vehicles. The nozzles of the pumps are required to be properly sized. Depending on whether the oxygenated gas is still in the control period, or the area has an oxygenated gasoline program with a credit program, pumps dispensing oxygenated gasoline are required to be labeled. During 1992 and later high ozone seasons and regulatory control periods, gasoline that exceeds the Reid vapor pressure standards outlined in Appendix 1-1 shall not be sold, offered for sale, imported, dispensed, supplied, or transported. No diesel fuel shall be distributed, transported, offered for sale, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-antraquinone and has an acetane index of at least 40, or a maximum aromatic content of 35 volume percent and a sulfur percentage of less than 0.05 percent (40 CFR 80.22(a), 80.22(d), 80.22(e), 80.24(a)(1), 80.27(a)(2), 80.35, 80.80(d), and 80.29(a)).
- Bulk Gasoline Terminals - Bulk gasoline terminals with greater than 75,700 L [19,997.82 gal] gasoline throughput per day that deliver liquid product into greater tank trucks, and that started construction or modification after 17 December 1980 are required to ensure that vapor tightness documentation is available for each gasoline tank truck, and that the tank ID No. is recorded as each gasoline tank truck is loaded (40 CFR 60.500 through 60.506).
- Rotogravure Printing Presses - Publication rotogravure printing presses, except for proof presses, that started construction or modification after 28 October, are required to ensure that gases are not being discharged containing VOC equal to more than 16 percent of the total mass of VOC solvent and water used at that facility during any one performance averaging period (40 CFR 60.430 through 60.435).
- Petroleum Storage Vessels - Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal) but less than 246,052 L (65,000 gal), that started construction or modification after 8 March 1974 but before 19 May 1978, or with a capacity greater than 246,052 L (65,000 gal) that started construction or modification after 11 June 1973 but before 19 May 1978, are required to meet specific standards for emissions and monitoring. These

standards vary depending upon whether the true vapor pressure of the petroleum liquid is greater or less than 11.1 psia. Storage vessels with a storage capacity greater than 151,416 L (40,000 gal) constructed after 18 May 1978 are required to ensure that the vessel has an external floating roof, or a fixed roof with an internal floating type cover, and a vapor recovery system. (40 CFR 60.110 through 60.113 and 60.110(a) through 60.115(a)).

- Volatile Organic Liquid (VOL) Storage Vessels - Storage vessels for VOLs, which have a capacity of greater than or equal to 40 m³ [10566.88 gal], for which construction, reconstruction, or modification started after 23 July 1984 are required to meet specific inspection, documentation, and notification requirement standards. These include ensuring that certain inspections are made, notifying the U.S. Environmental Protection Agency (USEPA) in advance of performing gap measurements, and providing it certain records upon request (40 CFR 60.110b through 60.115b).
- Open Burning - All open burning must be coordinated with agencies responsible for monitoring fire protection in the area (EM 385-1-1 para 09.A.13).
- Fugitive Emissions - The emission of volatile hazardous air pollutants (VHAPs) (vinyl chlorides and benzene) is required to be managed, monitored, and controlled according to specific requirements. These include taking certain actions when a leak is detected, ensuring that certain records are maintained, ensuring that pumps and compressors meet certain standards, and that pressure relief devices in gas/vapor service have no detectable emissions except during pressure releases. Valves and lines in VHAP service are required to be monitored monthly and repairs done within 15 days of leak detection. Systems and devices used to control VHAP emissions must recover vapors with 95 percent efficiency or greater. Enclosed combustion devices will be designed and operated to reduce VHAP and benzene emissions and closed-vent systems will have no detectable emissions (40 CFR 61.240 through 61.242-10, 61.246, and 61.247).
- CFCs and Halons - Facilities that procure CFCs and halons must do a CFC and Halon Annual Report. If a facility uses CFCs and halons, it is required to reduce dependence of CFCs and halons, minimize emissions, and implement conservation practices. To protect the ozone, no person repairing or servicing motor vehicles for payment can service a motor vehicle air conditioner (MVAC) in any way that affects the refrigerant unless they have been trained and certified and are using approved equipment. As of 15 November 1992, no Class I or Class II substances suitable for use in motor vehicles as a refrigerant can be sold or distributed in any container that is less than 20 lb [9.07 kg] to any person unless that person is trained and certified. Facilities that sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb [9.07 kg] are required to display a sign with certain wording. Servicing

of appliances containing CFCs and halons is required to prevent emissions (40 CFR 82.34(a), 82.34(b), 82.42(a) through 82.42(c), and 80.150 through 80.166; DOD Directive 6050.9, para D and E).

- **Additional Issues** - Many other types of sources have regulated air emissions. The following sources are regulated, but rarely found at Corps facilities; nonetheless, assessors must review the regulations for these sources if they are found at a Corps facility:
 - steam generators with greater than 29 MW (100 MBtu/h), but less than 73 MW (250 MBtu/h), heat input capacity, that were under construction or modification after 19 June 1984
 - fuel burning facilities constructed or modified after 17 August 1971 with greater than 73 MW (250 MBtu/h) heat input
 - municipal waste combustors with a capacity greater than 225 Mg (250 tons) per day that started construction or modification after 20 December 1989
 - incinerators with greater than 45 metric tons (50 tons) per day charging rate that started construction or modification after 17 August 1971
 - sewage sludge incinerators that combust greater than 1000 kg (2205 lb) per day which were constructed or modified after 11 June 1973
 - incinerators for beryllium containing waste
 - stationary gas turbines with a heat input greater than or equal to 10.7 gJ/h [10.17 MBtu/h] that were constructed or modified after 3 October 1977
 - sulfuric and nitric acid plants.

F. Key Compliance Definitions

These definitions were obtained from the previously listed regulations.

- **Annual Capacity Factor** - the ratio between the actual heat input to a steam generating unit from an individual fuel or combustion of fuels during a period of 12 consecutive calendar months and the potential heat input to the steam generating unit from all fuels, had the steam generating unit been operated for 8700 h during that 12-mo period at the maximum design heat input capacity (40 CFR 60.41c).
- **Appliance** - any device which contains and uses a Class I or Class II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer (40 CFR 82.152(a)).

- *Approved Equipment Testing Organization* - any organization which has applied for and received approval from the Administrator pursuant to 40 CFR 82.160 (40 CFR 82.152(b)).
- *Benzene Service* - a piece of equipment that either contains or contacts a fluid (liquid or gas) that is at least 10 percent benzene by weight (40 CFR 61.111).
- *Bulk Gasoline Terminal* - any gasoline facility that receives gasoline by pipeline, ship, or barge, and has a throughput greater than 75,700 L [19,997.82 gal] per day (40 CFR 60.501).
- *Bulk Gasoline Plant* - any gasoline distribution facility that has a throughput less than or equal to 75,700 L [19,997.82 gal] per day (40 CFR 60.111b).
- *Cartridge Filter* - discrete filter unit containing both filter paper and activated carbon that traps and removes contaminants from petroleum solvent, together with the piping and ductwork used in installing this device (40 CFR 60.621).
- *Certified Refrigerant Recovery or Recycling Equipment* - equipment certified by an approved equipment testing organization to meet the standards in 40 CFR 82.158(b) or (d), equipment certified pursuant to 40 CFR 82.36(a), or equipment manufactured before 15 November 1993, that meets the standards in 40 CFR 82.158(c), (e), or (g) (40 CFR 82.152(c)).
- *Closed-vent System* - a system that is not open to the atmosphere and is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device (40 CFR 61.241).
- *Coal Refuse* - any waste products of coal mining, cleaning, and coal preparation operations (e.g., culm, gob, etc.) containing coal, matrix material, clay, and other organic and inorganic material (40 CFR 60.41a).
- *Cofired Combustor* - a unit that burns municipal-type solid waste or refuse-derived fuel with a nonmunicipal solid waste fuel and that is subject to a Federally enforceable permit limiting the unit to combusting a fuel feed stream, 30 percent or less of the weight of which is comprised, in aggregate, of municipal-type solid waste or refuse-derived fuel as measured on a 24-h basis (40 CFR 60.51a).
- *Cogeneration Steam Generating Unit* - a steam-generating unit that simultaneously produces both electrical (or mechanical) and thermal energy from the same primary energy source (40 CFR 60.41c).

- *Commercial Refrigeration* - means, for the purposes of 40 CFR 82.156(i), the refrigeration appliances utilized in the retail food and cold storage warehouse sectors. Retail food includes the refrigeration equipment found in supermarkets, convenience stores, restaurants, and other food service establishments. Cold storage includes the equipment used to store meat, produce, dairy products, and other perishable goods. All of the equipment contains large refrigerant charges, typically over 75 lb [34.02 kg] (40 CFR 82.152(d)).
- *Commercial/Retail Waste* - material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities (40 CFR 60.51a).
- *Continuous Emissions Monitoring System (CEMS)* - a monitoring system for continuously measuring the emissions of a pollutant from an affected facility (40 CFR 60.51a).
- *Designated Volatility Nonattainment Area* - any area designated as being in nonattainment with the National Ambient Air Quality Standard (NAAQS) for ozone pursuant to rulemaking under Section 107(d)(4)(A)(ii) of the *Clean Air Act (CAA)* (40 CFR 80.2).
- *Designated Volatility Attainment Area* - an area not designated as being in nonattainment with the NAAQS for ozone (40 CFR 80.2).
- *Diesel Fuel* - any fuel sold in any state and suitable for use in diesel motor vehicles and diesel motor vehicle engines, and which is commonly or commercially known or sold as diesel fuel (40 CFR 80.2).
- *Disposal* - the process leading to and including the (40 CFR 82.152(e)):
 1. discharge, deposit, dumping or placing of any discarded appliance into or on any land or water
 2. disassembly of any appliance for discharge, deposit, dumping, or placing of its discarded component parts into or on any land or water
 3. disassembly of an appliance for reuse of its component parts.
- *Duct Burner* - a device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit (40 CFR 60.41c).
- *Dryer* - a machine used to remove petroleum solvent from articles of clothing or other textile or leather goods, after washing and removing excess petroleum solvent, together with the piping and ductwork used in the installation of this device (40 CFR 60.621).

- *Federally Enforceable* - all limitations and conditions enforceable by the Administrator, including those requirements developed pursuant to 40 CFR 60 and 61, requirements within any applicable state implementation plan, and any permit requirements established pursuant to 40 CFR 52.21 or under 40 CFR 51.18 and 40 CFR 51.24 (40 CFR 60.41b).
- *Fossil Fuel* - natural gas, petroleum, coal, and any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat (40 CFR 60.41a).
- *Fuel Pretreatment* - a process that removes a portion of the sulfur in a fuel before combustion of the fuel in a steam generating unit (40 CFR 60.41c).
- *Fugitive Emissions* - air pollutants entering into the atmosphere from other than a stack chimney, vent, or other functionally equivalent opening. Examples: vapors, dust, and fumes (40 CFR 51.301(j)).
- *Gasoline Carrier* - any distributor who transports or stores, or causes the transportation or storage of, gasoline or diesel fuel without taking title to or otherwise having any ownership of the gasoline, and without altering either the quality or quantity of the gasoline or diesel fuel (40 CFR 80.2).
- *Gasoline Distributor* - any person who transports or stores, or causes the transportation or storage of, gasoline or diesel fuel at any point between any gasoline refinery or importer's facility and any retail outlet or wholesale purchaser consumer facility (40 CFR 80.2).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Heat Input* - heat derived from combustion of fuel in a steam generating unit; this does not include the heat derived from preheated combustion air, recirculated flue gases, or exhaust gases from other sources (40 CFR 60.41c).
- *High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point between -50 and 10 °C [-46 and 50 °F] at atmospheric pressure (29.9 in. (75.95 cm) Hg). This definition includes, but is not limited to, appliances using refrigerants -12, -22, -114, -500, or -502 (40 CFR 82.152(f)).
- *Household Waste* - includes material discarded by single and multiple residential dwellings, hotels, motels, and other similar permanent or temporary housing (40 CFR 60.51a).

- *Incinerator* - any furnace used in the process of burning solid waste for the purpose of reducing the volume of the waste by removing combustible matter (40 CFR 60.51).
- *Industrial Process Refrigeration* - means, for the purposes of 40 CFR 82.156(i), complex customized appliances used in the chemical, pharmaceutical, petrochemical and manufacturing industries. This sector also includes industrial ice machines and ice rinks (40 CFR 82.152(g)).
- *Institutional Waste* - includes materials discarded by hospitals, schools, non-manufacturing activities at prisons, and government facilities (40 CFR 60.51a).
- *Large Municipal Waste Combustor (MWC)* - an MWC plant with a capacity of greater than 225 Mg (250 tons) per day of municipal solid waste (40 CFR 60.51a).
- *Lignite* - coal that is classified as lignite A or B according to American Society for Testing and Materials (ASTM) standards (40 CFR 60.41a).
- *Low-Loss Fitting* - any device that is intended to establish a connection between hoses, appliances, or recovery or recycling machines, and that is designed to close automatically or to be closed manually when disconnected, minimizing the release of refrigerant from hoses, appliances, and recovery or recycling machines (40 CFR 82.152(h)).
- *Low-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point above 10 °C [50 °F] at atmospheric pressure (29.9 in. (75.95 cm) Hg). This definition includes, but is not limited to, equipment utilizing refrigerants -11, -113, and -123 (40 CFR 82.152(i)).
- *Major Maintenance, Service, or Repair* - any maintenance, service, or repair involving the removal of any or all of the following appliance components (40 CFR 82.152(j)):
 1. compressor
 2. condenser
 3. evaporator
 4. auxiliary heat exchanger coil.
- *Medical Waste* - when defined as applicable to municipal waste combustors, it is any solid waste generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in production or testing of biologicals. Medical waste does not include any hazardous waste identified under the *Resource Conservation and Recovery Act, Subtitle C (RCRA-C)* nor any household waste as defined in *RCRA-C* (40 CFR 60.51a).

- *Modification* - in relation to New Source Performance Standards (NSPS), any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies except:
 - maintenance, repair and replacement which the Administrator determines to be routine for a source category
 - an increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility
 - an increase in the hours of operation
 - use of an alternate fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, the existing facility was designed to accommodate that alternate use. A facility will be designed to accommodate an alternative fuel an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as assessed prior to the change (40 CFR 60.14).
- *Motor Vehicle Air Conditioner (MVAC)* - any appliance that is a motor vehicle air conditioner as defined in 40 CFR 82, subpart B (40 CFR 82.152(k)).
- *Municipal Type Solid Waste* - household, commercial/retail, and/or institutional waste. Household, commercial/retail, and institutional wastes do not include sewage, wood pallets, construction and demolition wastes, or industrial process or manufacturing wastes. Municipal type solid waste does include motor vehicle maintenance materials, which are limited to vehicle batteries, used motor oil, and tires. Municipal solid waste does not include wastes that are solely segregated medical wastes. However, any mixture of segregated medical wastes and other wastes which contains more than 30 percent medical waste is considered to be municipal type solid waste (40 CFR 60.51a).
- *Municipal Waste Combustor (MWC)* - any device that combusts solid, liquid, or gasified municipal solid waste including, but not limited to, field-erected incinerators, modular incinerators, boilers, furnaces, and gasification/combustion units. This does not include combustion units, engines, or other devices that combust landfill gases collected by landfill gas collection systems (40 CFR 60.51a).
- *MVAC-Like Appliance* - mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a nonroad motor vehicle. This includes the air conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using HCFC-22 refrigerant (40 CFR 82.152(l)).
- *Nitric Acid Production Unit* - any facility producing nitric acid which measures 30 to 70 percent in strength by either the pressure or atmospheric pressure process (40 CFR 60.70).

- *Normally Containing a Quantity of Refrigerant* - containing the quantity of refrigerant within the appliance or appliance component when the appliance is operating with a full charge of refrigerant (40 CFR 82.152(m)).
- *Opacity* - the degree to which emissions reduce the transmission of light and obscure view of an object in the background (40 CFR 60.2).
- *Opening an Appliance* - any service, maintenance, or repair on an appliance that could be reasonably expected to release refrigerant from the appliance to the atmosphere unless the refrigerant was previously recovered from the appliance (40 CFR 82.152(n)).
- *Particulate Matter Emissions* - any airborne, finely divided solid or liquid material, except uncombined water, emitted to the ambient air (40 CFR 60.2).
- *PM₁₀* - particulate matter with an aerodynamic diameter less than or equal to a nominal 10 μm (40 CFR 58.1).
- *Process Stub* - a length of tubing that provides access to the refrigerant inside a small appliance or room air conditioner and that can be resealed at the conclusion of repair or service (40 CFR 82.152(p)).
- *Publication Rotogravure Printing* - any number of rotogravure printing units capable of printing simultaneously on the same continuous web or substrate and includes any associated device for continuous cutting and folding the printed web, where the following sellable paper products are printed: catalogs; direct mail advertisements; display advertisements; magazines; miscellaneous advertisements including brochures, pamphlets, catalogue sheets, circular folders, and announcements; newspapers; periodicals; and telephone and other directories (40 CFR 60.431).
- *Reclaim Refrigerant* - to reprocess refrigerant to at least the purity specified in the Air Conditioning and Refrigeration Institute (ARI) Standard 700-1988, *Specifications for Fluorocarbon Refrigerants* (Appendix A to 40 CFR 82, subpart F) and to verify this purity using the analytical methodology prescribed in ARI Standard 700-1988. In general, reclamation involves the use of processes or procedures available only at a reprocessing or manufacturing facility (40 CFR 82.152(q)).
- *Recover Refrigerant* - to remove refrigerant in any condition from an appliance without necessarily testing or processing it in any way (40 CFR 82.152(r)).
- *Recovery Efficiency* - the percentage of refrigerant in an appliance that is recovered by a piece of recycling or recovery equipment (40 CFR 82.152(s)).

- *Recycle Refrigerant* - to extract refrigerant from an appliance and clean refrigerant for reuse without meeting all of the requirements for reclamation. In general, recycled refrigerant is refrigerant that is cleaned using oil separation and single or multiple passes through devices, such as replaceable core filter-driers, which reduce moisture, acidity, and particulate matter. These procedures are usually implemented at the field job site (40 CFR 82.152(t)).
- *Refuse Derived Fuel* - combustible or organic portion of municipal waste that has been separated out and processed for use as fuel (40 CFR 60.51(a)).
- *Reid Vapor Pressure* - the absolute vapor pressure of volatile crude oil and volatile nonviscous petroleum liquids, except liquefied petroleum gases, as determined by the ASTM, Part 17, 1973, D-323-72 (reapproved 1977) (40 CFR 60.111(a)).
- *Self-Contained Recovery Equipment* - refrigerant recovery or recycling equipment that is capable of removing the refrigerant from an appliance without the assistance of components contained in the appliance (40 CFR 82.152(u)).
- *Small Appliance* - any of the following products that are fully manufactured, charged, and hermetically sealed in a factory with 5 lb [11.02 kg] or less of refrigerant (40 CFR 82.152(v)):
 1. refrigerators designed for home use
 2. freezers designed for home use
 3. room air conditioners (including window air conditioners and packaged terminal air conditioners)
 4. packaged terminal heat pumps
 5. dehumidifiers
 6. under-the-counter ice makers
 7. vending machines
 8. drinking water coolers.
- *Stationary Gas Turbines* - any simple cycle gas turbine, regenerative cycle gas turbine, or any gas turbine portion of a combined cycle steam/electric generating system that is not self-propelled. It may be mounted on a vehicle for portability (40 CFR 60.331).
- *Steam Generating Unit* - any furnace, boiler, or other device used for combusting fuel for the purpose of producing steam (including fossil fuel-fired steam generators associated with combined cycle gas turbines; nuclear steam generators are not included) (40 CFR 60.41a).
- *Sulfuric Acid Production Unit* - any facility producing sulfuric acids by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities

where conversion to sulfuric acid is used primarily as a means of preventing emissions to the atmosphere of SO₂ or other sulfur compounds (40 CFR 60.81).

- *System-Dependent Recovery Equipment* - refrigerant recovery equipment that requires the assistance of components contained in an appliance to remove the refrigerant from the appliance (40 CFR 82.152(w)).
- *Technician* - any person who performs maintenance, service, or repair that could reasonably be expected to release Class I or Class II substances from appliances into the atmosphere, including, but not limited to, installers, contract employees, in-house service personnel, and, in some cases, owners. Technician also means any person disposing of appliances except for small appliances (40 CFR 82.152(x)).
- *True Vapor Pressure* - the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute (API) Bulletin 2517, *Evaporation Loss From Floating Roof Tanks*, 1962 (40 CFR 60.111a).
- *Very High-Pressure Appliance* - an appliance that uses a refrigerant with a boiling point below -50 °C [-58 °F] at atmospheric pressure (29.9 in. [75.946 cm] Hg). This definition includes, but is not limited to, equipment utilizing refrigerants -13 and -503 (40 CFR 82.152(y)).
- *Very Low Sulfur Oil* - an oil that contains no more than 0.5 weight percent sulfur or that, when combusted without SO₂ emission control, has an SO₂ emission rate equal to or less than 215 ng/J (0.5 lb/ MBtu) heat input (40 CFR 60.41(b)).
- *Volatile Hazardous Air Pollutant (VHAP)* - a substance regulated under 40 CFR 61, subpart V for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene and vinyl chloride are VHAPs (40 CFR 61.241).
- *VHAP Service* - a piece of equipment that either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight a VHAP (40 CFR 61.241).
- *Volatile Organic Compound (VOC)* - any compound of carbon, excluding CO, CO₂, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions (40 CFR 51.100).
- *VOC Service* - in relationship to fugitive emissions, when a piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (40 CFR 61.241).

- *Volatile Organic Liquid (VOL)* - any organic liquid that can emit VOCs into the atmosphere except for VOLs which emit only those compounds which the Administrator has determined do not contribute appreciably to the formation of ozone. These compounds are identified in USEPA statements on the ozone abatement policy for state implementation plan (SIP) revisions (40 CFR 60.111b(k)).

AIR EMISSIONS MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|---------------------|---------------------------------|--|
| All Facilities | 1-1 through 1-3 | (5)(8)(15)(16) |
| Steam Generators | 1-4 through 1-7 | (5)(8)(16)(17) |
| Gasoline | 1-8 through 1-13 | (5)(10)(15)(16) |
| Printing Presses | 1-14 | (15)(16) |
| POL Storage Vessels | 1-15 and 1-16 | (15)(16) |
| VOL Storage Vessels | 1-17 and 1-18 | (15)(16) |
| Open Burning | 1-19 | (5)(8) |
| Fugitive Emissions | 1-20 through 1-26 | (5)(8)(15)(16) |
| CFCs and Halons | 1-27 through 1-46 | (5)(10)(15)(16)(17) |
| Recordkeeping | 1-47 and 1-48 | (15)(16)(17) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

AIR EMISSIONS MANAGEMENT

Records to Review

- State and local air pollution control regulations
- Agency air pollution control regulations
- Emissions inventory
- All air pollution source permits
- Plans and procedures applicable to air pollution control
- Emission monitoring records
- Opacity records
- Notices of violation (NOVs) to regulatory authorities
- Instrument calibration and maintenance records
- Reports/complaints concerning air quality
- Air Emergency Episode Plan
- State and/or Federal regulatory inspections
- Regulatory inspection reports
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action

Physical Features to Inspect

- All air pollution sources (fuel burners, incinerators, VOC sources, etc.)
- Air pollution monitoring and control devices
- Air emission stacks
- Air intake vents

People to Interview

- Environmental Compliance Coordinator (ECC)
- Safety and Occupational Health Office
- Operations
- Project Resource Manager
- Facility Managers
- Lab Manager

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. The chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 1-1 through 1-19 | 1-1 through 1-19 |
| 1-20 | deleted |
| 1-21 through 1-32 | 1-20 through 1-31 |
| no match | 1-32 through 1-48 |

| | | | |
|---------------------------------|---|--------------|---------------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

**COMPLIANCE CATEGORY:
AIR EMISSIONS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>ALL FACILITIES</p> <p>1-1. Determine actions or changes since previous review of air emissions (GMP).</p> <p style="text-align: center;">...</p> <p>1-2. Copies of all relevant Federal, Corps, and DOD regulations and guidance documents on air emissions should be available at the facility or division or district office (GMP).</p> <p style="text-align: center;">...</p> <p>1-3. Facilities are required to comply with state and local air quality regulations (CAA, 42 USC 7418(a), and ER 1165-2-116, para 3).</p> | <p>Determine if noncompliance issues have been resolved by checking a copy of the previous review report. (5)(15)(16)</p> <p style="text-align: center;">...</p> <p>Verify that copies of the following regulations are available and kept current: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - 40 CFR 60, <i>Standards of Performance for New Stationary Sources.</i> - 40 CFR 61, <i>National Emission Standards for Hazardous Air Pollutants.</i> - 40 CFR 80, <i>Regulation of Fuels and Fuel Additives.</i> - 40 CFR 82, <i>Protection of Stratospheric Ozone.</i> - DOD Directive 6050.9, <i>Chlorofluorocarbons (CFCs) and Halons.</i> 13 February 1989. - EM 385-1-1, <i>Safety and Health Requirements Manual</i>, October 1992. - ER 1165-2-116, <i>Water Resources Policies and Authorities</i>, 28 February 1968. - Applicable state and local regulations. <p style="text-align: center;">...</p> <p>Verify that the facility is complying with state and local air quality requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - air pollution episode standby plans - permits for construction and operation of sources of emissions - placement of control devices on fuel burning sources - incinerators with less than 45 metric tons (50 tons) per day heat input - incinerations of medical, pathological, and infectious waste - open burning and detonation - firefighting training - motor vehicle emissions and inspections - use of vapor control systems at gas dispensing facilities - transfer of fuel in tank trucks - solvent metal cleaners such as degreasers and cold cleaners - fugitive dust emissions from roads, quarries, sand and gravel pits, and construction activities - control of particulate emissions from woodworking shops |

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| COMPLIANCE CATEGORY: AIR EMISSIONS MANAGEMENT USACE ERGO | |
|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>1-3. (continued)</p> <p>...</p> <p>STEAM GENERATORS</p> <p>1-4. Steam generating units that started construction, modification (see definitions), or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to meet specific standards for emissions of SO₂ (40 CFR 60.40c and 60.42c).</p> | <ul style="list-style-type: none"> - transportation of refuse or materials in open vehicles - emissions and emission control requirements for the operation of existing fossil fuel-fired steam generators - the spray painting of vehicles, buildings, and/or furniture - certification of vehicles transporting VOC liquids - certification for operators of boilers - paving of roads and parking lots - toxic air pollutants - indoor air pollution.) <p>...</p> <p>Determine if the facility operates steam generating units that started construction, modification, or reconstruction after 3 June 1989 with a maximum heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h) but less than 29 MW (100 MBtu/h). (5)(8)(16)(17)</p> <p>Verify that facilities that combust only coal do not: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - discharge, into the atmosphere, gases containing SO₂ in excess of 10 percent of the potential SO₂ emission rate (a 90 percent reduction) - discharge gases containing SO₂ in excess of 520 ng/J (1.2 lb/MBtu) heat input. <p>Verify that facilities that combust coal and use an emerging technology do not: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - discharge into the atmosphere gases containing SO₂ in excess of 50 percent of the potential SO₂ emission rate (a 50 percent reduction) - discharge gases that contain SO₂ in excess of 260 ng/J (0.60 lb/MBtu) heat input. <p>Verify that facilities that combust coal in combination with other fuels do not: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - discharge, into the atmosphere, gases containing SO₂ in excess of 10 percent of the potential SO₂ emission rate (a 90 percent reduction) - discharge gases containing SO₂ in excess of the emissions limit determined by the formula outlined in Appendix 1-2. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--------------------------------|---|
| <p>1-4. (continued)</p> | <p>Verify that facilities that combust coal in combination with other fuels and use emerging technology do not: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - discharge gases containing SO₂ in excess of 50 percent of the potential SO₂ emission rate (a 50 percent reduction) - discharge gases containing SO₂ in excess of the emission limit determined by the formula outlined in Appendix 1-2. <p>Verify that facilities that combust coal refuse, alone or in a fluidized bed combustion steam generating unit, do not: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - discharge gases containing SO₂ in excess of 20 percent of the potential SO₂ rate (an 80 percent reduction) - discharge gases containing SO₂ in excess of 520 ng/J (1.2 lb/ MBtu) heat input. <p>(NOTE: If the facility combusts coal with coal refuse, the standards for facilities combusting coal are required to be met.)</p> <p>Verify that facilities that fire oil, or any fuel other than coal, with coal refuse do not: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - discharge, into the atmosphere, gases containing SO₂ in excess of 10 percent of the potential SO₂ emission rate (a 90 percent reduction) - discharge gases containing SO₂ in excess of the emissions limit determined by the formula in Appendix 1-2. <p>Verify that a facility that meets one of the following criteria, and combusts coal alone or in combination with any other fuel, does not discharge SO₂ in excess of the emissions limit determined by the formula in Appendix 1-2: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - facilities with a heat input capacity of 22 MW (75 MBtu/h) or less - facilities that have an annual capacity for coal of 55 percent or less - facilities located in noncontinental areas - facilities that combust coal in a duct burner as a part of a combined cycle system where 30 percent or less of the heat entering the steam generating unit is from combustion of coal in the duct burner and 70 percent or more is from exhaust gases. <p>Verify that facilities that combust oil meet one of the following: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - gases are not discharged that contain SO₂ in excess of 215 ng/J (0.50 lb/ MBtu) heat input - no oil is combusted that contains greater than 0.5 weight percent sulfur. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>1-5. Steam generating units that started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to meet specific standards for emissions of particulates (40 CFR 60.40c and 60.43c).</p> <p style="text-align: center;">...</p> | <p>Verify that facilities that combust coal or mixtures of coal with other fuels and have a heat input capacity of 8.7 MW (30 MBtu/h) or greater do not discharge particulate matter in excess of the following: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - 22 ng/J (0.05 lb/ MBtu) heat input if the facility combusts only coal or coal with other fuels and has an annual capacity factor of 10 percent for the other fuels - 43 ng/J (0.10 lb/ MBtu) heat input if the facility combusts coal with other fuels and has an annual capacity factor greater than 10 percent for the other fuels. <p>Verify that facilities that combust wood or mixtures of wood with fuels other than coal, and have a heat input capacity of 8.7 MW (30 MBtu/h) or greater, do not discharge particulate matter in excess of the following: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - 43 ng/J (0.10 lb/ MBtu) heat input if the facility has an annual capacity factor for wood greater than 30 percent - 130 ng/J (0.30 lb/ MBtu) heat input if the facility has an annual capacity factor for wood of 30 percent or less. <p>Verify that facilities that combust coal, wood, or oil with a heat input capacity of greater than 8.7 MW (30 MBtu) do not discharge gases with greater than 20 percent opacity (6-min average), except for one 6-min period per hour of not more than 27 percent opacity. (5)(8)(16)(17)</p> <p>(NOTE: Particulate matter and opacity standards apply at all times, except during periods of startup, shutdown, or malfunction.)</p> <p style="text-align: center;">...</p> |
| <p>1-6. Steam generating units that started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to meet specific monitoring standards for SO₂ and particulate matter (40 CFR 60.46c and 60.47c).</p> <p style="text-align: center;">...</p> | <p>Verify that continuous emissions monitoring systems are installed, calibrated, maintained, and operated for measuring SO₂ concentrations and either oxygen or CO₂ concentrations at the outlet of the SO₂ control device or the outlet of the steam generating unit if no control device is used. (5)(8)(16)(17)</p> <p>Verify that if continuous emissions monitoring systems for SO₂ are not used, the fuel is sampled prior to combustion. (5)(8)(16)(17)</p> <p>Verify that a continuous monitoring system is installed, calibrated, maintained, and operated for measuring opacity. (5)(8)(16)(17)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>1-7. Steam generating units that started construction, modification, or reconstruction after 3 June 1989 with a maximum design heat input capacity of greater than or equal to 2.9 MW (10 MBtu/h), but less than 29 MW (100 MBtu/h), are required to meet specific reporting requirements (40 CFR 60.48c).</p> <p style="text-align: center;">...</p> | <p>Verify that the facility submits excess emissions reports for any calendar quarter in which opacity limits are exceeded. (5)(8)(16)(17)</p> <p>Verify that if there have been no excess opacity emissions, a semiannual report has been submitted, stating that there were no excess emissions. (5)(8)(16)(17)</p> <p>Verify that facilities subject to the SO₂ emissions limits submit quarterly reports, including the following: (5)(8)(16)(17)</p> <ul style="list-style-type: none"> - calendar dates covered in the report - each 30-day average SO₂ emission rate or 30-day average sulfur content - reasons for noncompliance - descriptions of any corrective actions taken. <p style="text-align: center;">...</p> |
| <p>GASOLINE</p> <p>1-8. Leaded gasoline shall not be introduced into any motor vehicle that is labeled UNLEADED GASOLINE ONLY, or that is equipped with a gasoline tank filler inlet designed for introduction of unleaded gasoline (40 CFR 80.22(a)).</p> <p style="text-align: center;">...</p> | <p>Determine what grades of gasoline are used, where they are dispensed, and what controls are in place to ensure proper fueling of vehicles. (5)(10)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>1-9. Fuel pumps are required to display specific signs (40 CFR 80.22(d) and (e)).</p> <p style="text-align: center;">...</p> | <p>Verify that the following conditions are met by inspecting fuel dispensing areas: (5)(10)(15)(16)</p> <ul style="list-style-type: none"> - signs stating that only unleaded gas should be introduced into labeled vehicles are displayed at each pump stand - nozzles are properly sized - each fuel pump is labeled to indicate the type of fuel, i.e., UNLEADED GASOLINE or CONTAINS LEAD ANTI-KNOCK COMPOUNDS. <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>1-10. Gasoline pumps dispensing oxygenated gasoline are required to meet specific labeling requirements (40 CFR 80.35).</p> <p style="text-align: center;">...</p> <p>1-11. During 1992 and later high ozone seasons and regulatory control periods, gasoline that exceeds specific Reid vapor pressure standards shall not be sold, offered for sale, imported, dispensed, supplied, or transported (40 CFR 80.27(a)(2) and 80.27(d)).</p> <p style="text-align: center;">...</p> | <p>Determine if the installation is located in an area that has an oxygenated gasoline program with a minimum oxygen content per 1 gal [3.79 L] or minimum oxygen content requirements in conjunction with a credit program. (5)(10)(15)(16)</p> <p>Verify that if the installation is located in such an area, each gasoline pump dispensing oxygenated gasoline at a retail outlet has a label attached during the control period which states: <i>The gasoline dispensed from this pump is oxygenated and will reduce carbon monoxide pollution from motor vehicles.</i> (5)(10)(15)(16)</p> <p>Verify that if the installation is located in an area that has an oxygenated gasoline program with a credit program and no minimum oxygen content requirement, the fuel pump at a retail outlet in the control area has the following label: <i>The fuel dispensed from this pump meets the requirements of the Clean Air Act as part of a program to reduce carbon monoxide pollution from motor vehicles.</i> (5)(10)(15)(16)</p> <p>(NOTE: Consult with state and local authorities concerning control areas and control periods.)</p> <p style="text-align: center;">...</p> <p>Verify that facilities are monitored as indicated: (5)(10)(15)(16)</p> <ul style="list-style-type: none"> - retailers and wholesale purchaser-consumers: during the high ozone season (1 June to 15 September of any year) - importers, distributors, resellers, or carriers: during the regulatory control period (1 May to 15 September of any year). <p>Verify that a standard of 9.0 psi is not exceeded for all designated volatility attainment areas. (5)(10)(15)(16)</p> <p>Verify that the standards outlined in Appendix 1-1 are met for any designated volatility nonattainment areas (see 40 CFR 81). (5)(10)(15)(16)</p> <p>(NOTE: Gasoline that contains at least 9 percent and no more than 10 percent denatured, anhydrous ethanol may exceed the Reid vapor pressure standards outlined in Appendix 1-1 by 1.0 psi [6.89 kPa].)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>1-12. As of 1 October 1993, no diesel fuel shall be distributed, transported, offered for sale, or dispensed for use in motor vehicles unless it is free of the dye 1,4-dialkylamino-anthraquinone and has an acetane index of at least 40 or a maximum aromatic content of 35 volume percent and a sulfur percentage of less than 0.05 percent (40 CFR 80.24a(1) and 80.29a).</p> <p style="text-align: center;">...</p> <p>1-13. Bulk gasoline terminals, with greater than 75,700 L [19997.82 gal] gasoline throughput per day, that deliver liquid product into greater tank trucks, and that started construction or modification after 17 December 1980, are required to meet specific operating standards (40 CFR 60.500 through 60.506).</p> | <p>Verify that the dye, which is blue-green, is not used in the fuel. (5)(10)(15)(16)</p> <p style="text-align: center;">...</p> <p>Verify that each facility has a vapor collection system designed to collect the total organic compound vapors displaced from tank trucks during product loading and to prevent the total organic compounds collected at one loading rack from passing to another loading rack. (5)(10)(15)(16)</p> <p>Verify that emissions from the vapor collection system do not exceed 35 mg of total organic compound per liter of gasoline loaded; however, facilities with existing vapor processing systems that were constructed or refurbished before 17 December 1980 may emit 80 mg/L of total organic compound per liter of gasoline loaded. (5)(10)(15)(16)</p> <p>Determine if the following loading procedures are followed: (5)(10)(15)(16)</p> <ul style="list-style-type: none"> - vapor tightness documentation is available for each gasoline tank truck - the tank ID No. is recorded as each gasoline tank truck is loaded - each tank ID No. is cross-checked with the file of tank vapor tightness documentation within 2 weeks after the tank is loaded <p>steps are taken to ensure that only vapor-tight tanks are loaded and that vapor collection systems are operational.</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>1-13. (continued)</p> <p>...</p> | <p>Verify that the vapor collection and liquid loading equipment is designed and operated to prevent gauge pressure in the delivery tank from exceeding 4500 pascals (450 mm of water) during product loading. (5)(1)(15)(16)</p> <p>Verify that pressure vacuum vents in the vapor collection system do not open at a system pressure of less than 4500 pascals (450 mm of water). (5)(10)(15)(16)</p> <p>Verify that a monthly inspection of the vapor collection system, the vapor processing system, and each loading rack handling gasoline is done during loading and that inspection records are kept on file for 2 yr. (5)(10)(15)(16)</p> <p>Verify that leaks are repaired within 15 calendar days after detection. (5)(10)(15)(16)</p> <p>Verify that records of all replacements or additions of components performed on existing vapor processing systems are kept for at least 3 yr. (5)(10)(15)(16)</p> <p>...</p> |
| <p>PRINTING PRESSES</p> <p>1-14. Publication roto-gravure printing presses, except for proof presses, that started construction, modification, or reconstruction after 28 October 1980 are required to meet specific standards concerning VOC emissions (40 CFR 60.430 through 60.435).</p> <p>...</p> | <p>Determine if the facility operates any publication rotogravure printing presses. (15)(16)</p> <p>Verify that gases are not being discharged containing VOC equal to more than 16 percent of the total mass of VOC solvent and water used at that facility during any one performance averaging period. (15)(16)</p> <p>(NOTE: Each performance averaging period is 30 consecutive calendar days.)</p> <p>Verify that facilities using waterborne ink systems or solventborne ink systems with solvent recovery systems record the amount of solvent and water used, solvent recovered, and estimated emission percentage for each calendar month, and maintain these records for 2 yr. (15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>POL STORAGE VESSELS</p> <p>1-15. Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal), but less than 246,052 L (65,000 gal), that started construction or modification after 8 March 1974, but before 19 May 1978, or with a capacity greater than 246,052 L (65,000 gal) that started construction or modification after 11 June 1973 but before 19 May 1978, are required to meet specific standards for emissions and monitoring (40 CFR 60.110 through 60.113).</p> <p style="text-align: center;">...</p> <p>1-16. Storage vessels for petroleum liquids with a storage capacity greater than 151,416 L (40,000 gal), constructed after 18 May 1978, are required to meet specific standards (40 CFR 60.110a through 60.115a).</p> | <p>Determine if the facility has any petroleum storage tanks meeting these parameters. (15)(16)</p> <p>Determine the vapor pressure of the petroleum liquids being stored. (15)(16)</p> <p>Verify that if the true vapor pressure of the petroleum stored is greater than or equal to 78 mm Hg (1.5 psia) but not less than 570 mm Hg (11.1 psia), the storage vessel is equipped with a floating roof and a vapor recovery system or their equivalents. (15)(16)</p> <p>Verify that if the true vapor pressure of the petroleum liquid being stored is greater than 570 mm Hg (11.1 psia), the storage vessel is equipped with a vapor pressure recovery system or its equivalent. (15)(16)</p> <p>Verify that if proper vapor recovery and return or disposal systems are not in place, a record is maintained of the petroleum liquid stored, the period of storage, and the maximum true vapor pressure of the liquid during the storage period. (15)(16)</p> <p>(NOTE: Facilities storing petroleum liquids with a Reid vapor pressure of less than 6.9 kPa (1.0 psia) are not required to keep records.)</p> <p style="text-align: center;">...</p> <p>Determine if the facility has any liquid petroleum storage vessels meeting these parameters. (15)(16)</p> <p>Determine the true vapor pressure of the liquids stored. (15)(16)</p> <p>Verify that vessels storing petroleum liquid with a true vapor pressure greater than or equal to 10.3 kPa (1.5 psia) but less than 76.6 kPa (11.1 psia) are equipped with one of the following: (15)(16)</p> <ul style="list-style-type: none"> - an external floating roof meeting design requirements outlined in 40 CFR 60.112a - a fixed roof with an internal floating type cover equipped with a continuous closure device between the tank wall and edges - a vapor recovery system that collects all VOC vapors and gases discharged from the storage vessel and a vapor return or disposal system to process the VOC vapors and gases to reduce emissions by at least 95 percent by weight - an equivalent, approved system. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>1-16. (continued)</p> <p>...</p> | <p>Verify that vessels storing petroleum liquids with a vapor pressure greater than 76.6 kPa (11.1 psia) are equipped with a vapor recovery system that collects all VOC vapors and gases and a vapor return or disposal system that is designed to process the VOC vapors to reduce emissions by at least 95 percent by weight. (15)(16)</p> <p>Verify that the following testing is done: (15)(16)</p> <ul style="list-style-type: none"> - gap measurement for primary seals of external floating roofs shall be measured at least once every 5 yr - gap measurement for secondary seals of external floating roofs shall be measured at least once every year. <p>Verify that the following records are kept: (15)(16)</p> <ul style="list-style-type: none"> - records of gap measurement are to be kept for at least 2 yr following the date of measurement - records of the petroleum liquid stored, the period of storage, and the maximum true vapor pressure during the storage, unless the storage vessel has a vapor recovery and return or disposal system. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>VOL STORAGE VESSELS</p> <p>1-17. Storage vessels for VOLs with a capacity greater than or equal to 40 m³ [10566.88 gal], for which construction, reconstruction, or modification was started after 23 July 1984, are required to meet specific standards (40 CFR 60.110b through 60.115b).</p> | <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> - pressure vessels designed to operate both in excess of 204.9 kPa [29.72 psi] and without emissions to the atmosphere - vessels that are permanently attached to mobile vehicles - vessels located at bulk gasoline plants - vessels located at gasoline service stations.) <p>Determine if any of the storage vessels on the facility meet these parameters. (15)(16)</p> <p>Determine the vapor pressure of the liquids being stored in the vessels. (15)(16)</p> <p>Verify that storage vessels with a design capacity of at least 151 m³ [39,889.98 gal], containing VOL with a vapor pressure equal to or greater than 5.2 kPa [0.75 psi], but less than 76.6 kPa [11.11 psi], or storage vessels with a capacity of at least 75 m³ [19,812.90 gal], but less than 151 m³ [39,889.98 gal], containing VOL that has a maximum vapor pressure equal to or greater than 27.6 kPa [4.0 psi], but less than 76.6 kPa [11.11 psi], are equipped with one of the following: (15)(16)</p> <ul style="list-style-type: none"> - a fixed roof in combination with an internal floating roof - an external floating roof - a closed vent system and control device that reduces emissions by 95 percent by weight - an approved equivalent system. <p>Verify that storage vessels with a design capacity of at least 75 m³ [19,812.90 gal], containing a VOL with a maximum true vapor pressure greater than or equal to 76.6 kPa [11.11 psi], are equipped with one of the following: (15)(16)</p> <ul style="list-style-type: none"> - a closed vent system and control device that reduces emissions 95 percent by weight - an approved, equivalent alternative method. <p>Verify that the accumulated areas or gaps do not exceed: (15)(16)</p> <ul style="list-style-type: none"> - 212 cm²/m of tank diameter between the tank wall and the primary seal; the width of any portion of any gap should not exceed 3.81 cm [1.5 in.] - 21.2 cm²/m of tank diameter between the tank wall and the secondary seal; the width of any portion of any gap should not exceed 1.27 cm [0.5 in.]. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>1-18. Storage vessels for VOLs with a capacity greater than or equal to 40 m³ [10566.88 gal], for which construction, reconstruction, or modification was started after 23 July 1984, are required to meet specific inspection, documentation, and notification requirement standards (40 CFR 60.110b through 60.115b).</p> | <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> - pressure vessels designed to operate both in excess of 204.9 kPa [29.72 psi] and without emissions to the atmosphere - vessels which are permanently attached to mobile vehicles - vessels located at bulk gasoline plants - vessels located at gasoline service stations.) <p>Verify that the following are done: (15)(16)</p> <ul style="list-style-type: none"> - inspection of internal floating roofs, primary seals, and secondary seals for holes, tears, or defects prior to filling the tank - visual inspection of the internal floating roof and primary or secondary seals of vessels with a liquid-mounted or mechanical shoe primary seal at least once every 12 mo after the initial fill - inspection of vessels with a double-seal system at least every 5 yr - inspection of internal floating roofs, primary seals, secondary seals, gaskets, slotted membranes, and sleeve seals each time the storage vessel is emptied and degassed - whenever control equipment is installed, measurement of gap areas: <ul style="list-style-type: none"> - at least once every 5 yr for gaps between the tank wall and the primary seal - at least once per year for gaps between the tank wall and the secondary seal. <p>Verify that, as problems are found, the vessel is either repaired or removed from service within 45 days.</p> <p>Verify that a procedure is in place to notify the USEPA in advance of performing gap measurement and to provide, upon request, copies of the following records, which are to be maintained for 2 yr: (15)(16)</p> <ul style="list-style-type: none"> - inspection records - repair or removal from service of a vessel - operating plans - monitoring records - records showing the dimensions of storage vessels and capacity. <p>Verify that for vessels with a design capacity of at least 151 m³ [39,889.98 gal], which store a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa [0.51 psi], or vessels with a design capacity of at least 75 m³ [19,812.90 gal], but less than 151 m³ [39,889.98 gal], which store a liquid with a true vapor pressure greater than or equal to 15.0 kPa [2.18 psi], a record is kept of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the storage period. (15)(16)</p> |

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| <p>1-18. (continued)</p> | <p>(NOTE: This does not apply to vessels storing a waste mixture of indefinite or variable composition or vessels equipped with a closed-vent system and control device.)</p> <p>Verify that, except for vessels equipped with a closed vent system and control device, a procedure exists to notify the USEPA within 30 days if the maximum true vapor pressure of a liquid exceeds the following limits for the capacities listed: (15)(16)</p> <ul style="list-style-type: none"> - vessels with a design capacity of at least 151 m³ [39,889.98 gal], which store a liquid with a maximum vapor pressure that is normally less than 5.2 kPa [0.75 psi] - vessels with a design capacity greater than 75 m³ [19,812.90 gal], but less than 151 m³ [39,889.98 gal], which store a liquid with a maximum true vapor pressure that is normally less than 27.6 kPa [4.0 psi]. (The USEPA should be notified within 30 days if the maximum true vapor pressure of the liquid exceeds the allowed maximum true vapor pressure according to capacity.) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| OPEN BURNING 1-19. All burning must be coordinated with agencies responsible for monitoring fire protection in the area (EM 385-1-1, para 09.A.13). ... FUGITIVE EMISSIONS 1-20. The emission of VHAPs, which includes vinyl chlorides and benzene from pumps, compressors, pressure relief devices, sampling connection systems, flanges and other connectors, and product accumulator vessels operating in VHAP service, are required to be managed according to specific requirements (40 CFR 61.240 through 61.242-1, 61.242-10, 61.246, and 61.247). ... | Determine if the facility conducts any open burning. (5)(8) Verify that the facility coordinates burning with local agencies. (5)(8) ... Determine where the facility operates sources in VHAP service. (15)(16) Verify that when a leak is detected: (15)(16) <ul style="list-style-type: none"> - a weatherproof and readily visible identification with the equipment ID No. is attached to the leaking equipment - the identification is removed only after no leak has been detected for 2 mo or the leak is repaired - leaks detected for pumps, compressors, pressure-relief devices in liquid service, and flanges are recorded in a log and maintained for 2 yr at a readily accessible location. Verify that the following records are maintained: (15)(16) <ul style="list-style-type: none"> - a list of ID No. of all equipment to which a standard applies - a list of equipment designated for no detectable emissions - dates of compliance tests - a list of ID No. for equipment in vacuum service - information and data used to demonstrate that a piece of equipment is not in VHAP service. Verify that a semiannual report listing the number of leaks identified, items which were not repaired, explanation of repair delays or infeasibility of a shutdown, dates of shutdowns, and revisions to previous reports, is submitted to the USEPA Administrator. (15)(16) ... |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>1-21. The emission of VHAPs, which includes vinyl chlorides and benzene, from pumps in VHAP service, is required to be monitored and controlled (40 CFR 61.240 through 61.242-2).</p> <p style="text-align: center;">...</p> | <p>Determine where the facility operates pumps in VHAP service. (15)(16)</p> <p>Verify that pumps meet the following standards: (15)(16)</p> <ul style="list-style-type: none"> - they are visually inspected weekly for leaks - they are monitored monthly using standard test methods for leaks - leaks are repaired within 15 days. <p>(NOTE: Exemptions include:</p> <ul style="list-style-type: none"> - pumps equipped with properly operating dual mechanical seal systems are exempt from the monitoring requirements - pumps designated for no detectable emissions, as indicated by a reading of less than 500 ppm above background, must comply with the repair requirements only if no externally actuated shaft is penetrating the pump house and it is tested as having no detectable emissions - pumps equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device are exempt from all standards - pumps in unmanned plant sites are exempt from weekly inspection requirements if each pump is visually inspected as often as possible and at least monthly.) <p style="text-align: center;">...</p> |
| <p>1-22. The emission of VHAPs, which includes vinyl chlorides and benzene, from compressors in VHAP service is required to be monitored and controlled (40 CFR 61.240 through 61.242-1 and 61.242-3).</p> | <p>Determine where the facility operates compressors in VHAP service. (15)(16)</p> <p>Verify that compressors meet the following standards: (15)(16)</p> <ul style="list-style-type: none"> - they are equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluids and: <ul style="list-style-type: none"> - operate with the barrier fluid at a pressure greater than the compressor stuffing box pressure, or - are equipped with a barrier fluid system that is connected by a closed-vent system to a control device, or - are equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions or the barrier fluid is not in VHAP service - barrier fluid systems are equipped with a sensor to detect the failure of the seal system, barrier fluid system, or both, and the sensors are checked daily or have an audible alarm, unless the compressor is located within the boundary of an unmanned plant site - leaks are repaired within 15 days. <p>(NOTE: The following are exempt from some or all compressor requirements:</p> <ul style="list-style-type: none"> - compressors equipped with closed vent systems for capturing and transporting leakage into a control device are exempt from seal system requirements - compressors designated for no detectable emissions are exempt from all requirements if they are demonstrated to be operating with an instrument reading of less than 500 ppm above background and are tested for compliance annually.) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>1-23. The emission of VHAPs, which includes vinyl chlorides and benzene, from pressure relief devices, sampling connection systems, flanges and other connectors, and product accumulator vessels operating in VHAP service are required to be monitored and controlled (40 CFR 61.240 through 61.242-1, 61.242-4, 61.242-5, 61.242-8, and 61.242-9).</p> <p>...</p> | <p>Determine where the facility operates sources in VHAP service. (5)(8)(15)(16)</p> <p>Verify the pressure relief devices in gas/vapor service meet the following, except during pressure releases: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - they are operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background - after a pressure release, the device is returned to a state of no detectable emissions within 5 days. <p>(NOTE: Pressure relief devices equipped with a closed-vent system capable of capturing and transporting leakage to a control device are exempted from the listed requirements.)</p> <p>Verify that sampling connectors are equipped with a closed-purge system or closed-vent system that: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - returns the purged process fluid directly to the process line - collects and recycles the purged process fluid - is designed and operated to capture and transport all purged process fluid to a control device. <p>(NOTE: Insitu sampling systems are exempt from the requirements for sampling connectors.)</p> <p>Verify that pressure relief devices in liquid service and flanges and other connectors are monitored within 5 days if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method and that repair is done within 15 days. (5)(8)(15)(16)</p> <p>Verify that product accumulator vessels are equipped with a closed-vent system capable of capturing and transporting any leakage from the vessel to a control device. (5)(8)(15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>1-24. The emission of VHAPs, which includes vinyl chlorides and benzene, from pumps, compressors, pressure relief devices, sampling connection systems, flanges and other connectors, and product accumulator vessels operating in VHAP service are required to be managed according to specific requirements (40 CFR 61.240 through 61.242-1, 61.242-10, 61.246, and 61.247).</p> | <p>Determine where the facility operates sources in VHAP service. (5)(8)(15)(16)</p> <p>Verify that when a leak is detected: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - a weatherproof and readily visible identification mark with the equipment ID No. is attached to the leaking equipment - the identification is removed only after no leak has been detected for 2 mo or the leak is repaired - leaks detected for pumps, compressors, pressure-relief devices in liquid service, and flanges are recorded in a log and maintained for 2 yr at a readily accessible location. <p>Verify that the following records are maintained: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - a list of ID No. of all equipment to which a standard applies - a list of equipment designated for no detectable emissions - dates of compliance tests - a list of ID No. for equipment in vacuum service - information and data used to demonstrate that a piece of equipment is not in VHAP service. <p>Verify that a semiannual report listing the number of leaks identified, items that were not repaired, explanation of repair delays or infeasibility of a shutdown, dates of shutdowns, and revisions to previous reports, is submitted to the USEPA Administrator. (5)(8)(15)(16)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>1-25. Valves and lines in VHAP service, including vinyl chlorides and benzene, are required to be properly operating and monitored (40 CFR 61.242-6, 61.242-7, 61.243-1, 61.246, and 61.247).</p> | <p>Determine which valves and lines at the facility are in VHAP service. (5)(8)(15)(16)</p> <p>Verify that open-ended valves or lines are equipped with a cap, blind flange, or second valve that seals the open end at all times, except during operations requiring process fluid flow through the valve or line. (5)(8)(15)(16)</p> <p>Verify that open-ended valves or lines with a second valve are operated so that the valve on the process fluid end is closed before the second valve is closed. (5)(8)(15)(16)</p> <p>Verify that valves are operated and monitored in the following ways: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - valves are monitored monthly; however, valves for which a leak has not been detected for 2 successive months may be monitored quarterly until a leak is detected - after notifying the USEPA Administrator, the following practices may be used: <ul style="list-style-type: none"> - after 2 consecutive quarterly leak detection periods where the percentage of valves leaking is equal to or less than 2.0 percent, the operator may begin to skip one of the quarterly leak detection periods - after 5 consecutive quarterly leak detection periods where the percentage of valves leaking is equal to or less than 2.0 percent, the operator may begin to skip three quarterly leak detection periods - repair is done within 15 days of leak detection. <p>(NOTE: The following valves are exempted from specific requirements:</p> <ul style="list-style-type: none"> - valves designated for no detectable emissions are exempt from the monthly monitoring requirements if there is no external actuating mechanism in contact with the process fluid and if the valve is tested for compliance annually - valves designated as unsafe to monitor are exempt from the monthly monitoring requirements if it is demonstrated that the valve is unsafe to monitor and if there is a written plan requiring monitoring of the valve during safe-to-monitor times - valves designated as difficult to monitor are exempt from the monthly monitoring requirements if it is demonstrated that the valve cannot be monitored without elevating the monitoring personnel more than 2 m [6.56 ft] above a support surface and if a written plan is followed that requires monitoring of the valve at least once a year.) <p>(NOTE: Repair may be delayed if the repair is technically infeasible or if the equipment is isolated.)</p> |

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| <p>1-25. (continued)</p> <p>...</p> | <p>Verify that when a leak is detected: (5)(15)(16)</p> <ul style="list-style-type: none"> - a weatherproof and readily visible identification mark with the equipment ID No. is attached to the leaking equipment - the identification is removed only after no leak has been detected for 2 mo or the leak is repaired - leaks detected for valves shall be recorded in a log and maintained for 2 yr at a readily accessible location. <p>Verify that the following records are maintained: (5)(15)(16)</p> <ul style="list-style-type: none"> - a list of ID No. of all equipment to which a standard applies - a list of equipment designated for no detectable emissions - dates of compliance tests - a list of ID No. for equipment in vacuum service - information and data used to demonstrate that a piece of equipment is not in VHAP service. <p>Verify that a semiannual report listing the number of leaks identified, items that were not repaired, explanation of repair delays or infeasibility of a shutdown, dates of shutdowns, and revisions to previous reports, is submitted to the USEPA Administrator. (5)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>1-26. Systems and devices used to control VHAP emissions, including benzene and vinyl chloride emissions, shall be properly operated (40 CFR 61.242-11, 61.246, and 61.247).</p> <p>...</p> | <p>Verify that closed-vent systems and control devices used to control VHAP emissions meet the following: (5)(15)(16)</p> <ul style="list-style-type: none"> - vapor recovery systems are designed and operated to recover the organic vapors vented to them with 95 percent efficiency or greater - enclosed combustion devices are designed and operated to reduce the VHAP and benzene emissions vented to them with an efficiency of 95 percent or greater or to provide a minimum residence time of 0.50 s at a minimum temperature of 760 °C [1400 °F] - closed-vent systems shall have no detectable emissions, be monitored annually, and have leaks repaired within 15 days - these systems are operated at all times when emissions may be vented to them. <p>Verify that for closed vent system and control devices, the following records are kept in a readily accessible location: (5)(15)(16)</p> <ul style="list-style-type: none"> - detailed schematics - dates and descriptions of any changes to the system - periods when they are not operating - dates of startups and shutdowns. <p style="text-align: center;">...</p> |

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| <p>CFCs AND HALONS</p> <p>1-27. Facilities that procure CFCs and halons are required to report procurement data annually (DOD Directive 6050.9, para D and E).</p> <p>...</p> <p>1-28. In order to minimize atmospheric emissions of ozone-depleting substances, specific GMPs should be instituted at the facility (GMP).</p> <p>...</p> <p>1-29. In order to protect the ozone, no person repairing or servicing motor vehicles for payment can service an MVAC in any way that affects the refrigerant unless he or she has been trained and certified and is using approved equipment (40 CFR 82.34(a), 82.42(a), 82.42(b)(1), 82.42(b)(2), and 82.42(b)(4)).</p> <p>...</p> | <p>Determine if an annual report on the amount of CFCs and halons procured has been completed. (5)</p> <p>(NOTE: The reviewer should keep a copy of the report, as it will be used in later stages of the review when facilities are inspected.)</p> <p>Verify that areas where CFCs and halons are used and/or stored meet the following requirements: (10)(15)(16)</p> <ul style="list-style-type: none"> - dependence on CFCs and halons has been reduced - emissions are being minimized - conservation practices have been implemented. <p>Verify that the facility is working toward the goals in Appendix 1-3. (10)(15)(16)</p> <p>...</p> <p>Verify that ozone-depleting substances are procured only in the absence of suitable alternatives. (10)(15)(16)</p> <p>Verify that there is no disposal of ozone-depleting substance by direct release to the atmosphere. (10)(15)(16)</p> <p>Verify that ozone-depleting substances are recycled. (10)(15)(16)</p> <p>...</p> <p>Determine if the facility services MVACs for payment. (15)</p> <p>Verify that the individual who does the repairs is certified and that the equipment being used is approved by the USEPA. (15)</p> <p>Verify that the USEPA Administrator has been notified that there is an individual onsite who has been trained and certified and is performing MVAC repair. (15)</p> <p>Verify that the facility keeps records for 3 yr of personnel certification and of where the refrigerant is sent. (15)</p> <p>(NOTE: These restrictions do not become effective until 1 January 1993 when fewer than 100 MVACs were serviced or repaired in calendar year 1990 and the USEPA Administrator was notified of the number of vehicles serviced by 13 August 1992.)</p> <p>(NOTE: Certifications are not transferable.)</p> <p>...</p> |

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| <p>1-30. As of 15 November 1992, no Class I or Class II substances suitable for use in motor vehicles as a refrigerant (see Appendix 1-4) can be sold or distributed in any container that is less than 20 lb [9.07 kg] to any person unless that person is trained and certified (40 CFR 82.34(b) and 82.42(b)(3)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility carries any of the Class I or Class II substances listed in Appendix 1-4. (15)</p> <p>Verify, by reviewing records of sales, that these substances are only sold or distributed to a certified individual. (15)</p> <p>Verify that distribution and sales records for these substances are kept for 3 yr. (15)</p> <p>(NOTE: Sales of these substances can be made to an uncertified individual if the buyer is purchasing small containers for resale only.)</p> |
| <p>1-31. Facilities that sell Class I or Class II substances suitable for use as a refrigerant in containers of less than 20 lb [9.07 kg] are required to display a specific sign (40 CFR 82.42(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that a sign is displayed stating the following: (15)</p> <ul style="list-style-type: none"> - It is a violation of Federal laws to sell containers of Class I and Class II refrigerant of less than 20 lb [9.07 kg] of such refrigerant to anyone who is not properly trained and certified to operate approved refrigerant recycling equipment. |
| <p>1-32. As of 1 January 2015 the use of Class II substances (see Appendix 1-3) is forbidden except in certain situations (42 USC 7671d(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that a program is underway to eliminate the use of Class II substances unless:</p> <ul style="list-style-type: none"> - the substance has been reused or recycled - it is used and entirely consumed (except for trace quantities) in the production of other chemicals - it is used as a refrigerant in appliances manufactured prior to 1 January 2020. |

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| <p>1-33. No person maintaining, servicing, repairing, or disposing of appliances can knowingly vent or release to the environment any Class I or Class II substance used as a refrigerant (40 CFR 82.150 and 82.154(a)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility is maintaining, servicing, repairing, or disposing of appliances containing refrigerants. (15)(16)(17)</p> <p>Verify that Class I or II substances are not being vented to the atmosphere. (15)(16)(17)</p> <p>(NOTE: <i>De minimis</i> releases that are associated with good faith attempts to recycle or recover refrigerants are not considered a violation.)</p> <p>(NOTE: These requirements apply to the following:</p> <ul style="list-style-type: none"> - any person servicing, maintaining, or repairing appliances except for MVACs - persons disposing of appliances, including MVACs - refrigerant reclaimers, appliance owners, recycling and recovery equipment.) <p style="text-align: center;">...</p> |

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| <p>1-34. No person can open appliances other than MVACs for maintenance, service, or repair, and no person can dispose of appliances, except for small appliances, MVACs, and MVAC-like appliances, unless specific requirements are met (40 CFR 82.154(b) and 82.156 (a)(5)).</p> <p style="text-align: center;">...</p> | <p>Verify that the required practices outline in 40 CFR 82.156 (see checklist items 1-37 through 1-46) are met. (15)(16)(17)</p> <p>Verify that equipment is used that is certified for the appliance in question. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>1-35. Facilities maintaining, servicing, or repairing appliances other than MVACs, and facilities disposing of appliances other than small appliances and MVACs, are required to submit certification to the USEPA (40 CFR 82.162 (a)).</p> <p style="text-align: center;">...</p> | <p>Verify that the facility has submitted certification to the USEPA that it has acquired certified recovery or recycling equipment and is in compliance with applicable requirements. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>1-36. Facilities recovering refrigerant from small appliances, MVACs, and MVAC-like appliances for the purpose of disposing of these appliances, are required to certify to the USEPA that appropriate recovery equipment has been acquired (40 CFR 82.162(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that the facility has submitted certification to the USEPA that it has acquired appropriate recovery equipment. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
AIR EMISSIONS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>1-37. Facilities opening appliances, except for small appliances and MVACs, for maintenance, service, or repair, and all persons disposing of appliances other than small appliances, must have at least one piece of certified, self-contained recovery equipment available (40 CFR 82.156(b) and 82.156(e)).</p> <p style="text-align: center;">...</p> | <p>Verify that the facility has at least one available piece of equipment. (15)(16)(17)</p> <p>(NOTE: Refrigerant may be returned to the appliance from which it is recovered or to another appliance without being recycled or reclaimed, unless the appliance is an MVAC-like appliance.)</p> <p style="text-align: center;">...</p> |
| <p>1-38. System-dependent equipment must not be used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant (40 CFR 82.156(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that system-dependent equipment is not used with appliances normally containing more than 15 lb [6.80 kg] of refrigerant. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>1-39. When appliances other than MVACs are opened for service, maintenance or repair, the refrigerant must be evacuated in either the entire unit or the part to be serviced, if the part can be isolated, to a system receiver or a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that refrigerant is evacuated to either a system receiver or certified recovery or recycling machine. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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**COMPLIANCE CATEGORY:
AIR EMISSIONS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>1-40. When appliances, except for small appliances, MVACs, and MVAC-like appliances, are disposed of, the refrigerant must be evacuated from the entire unit to a certified recovery or recycling machine (40 CFR 82.150 and 82.156(a)).</p> <p style="text-align: center;">...</p> <p>1-41. When appliances, except for small appliances, MVACs, and MVAC-like appliances, are opened for maintenance, service, or repair, they must be evacuated to specific levels before the appliance is opened (40 CFR 82.150, 82.156 (a)(1), and 82.156(a)(2)).</p> <p style="text-align: center;">...</p> | <p>Verify that if disposal is occurring, the refrigerant is being evacuated to a certified recovery or recycling machine. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that evacuation is done to the levels in Appendix 1-5 prior to opening the appliance unless one of the following conditions exists: (15)(16)(17)</p> <ul style="list-style-type: none"> - evacuation of the appliance is not to be done upon completion of the maintenance, service, or repair, and the maintenance, service, or repair is not major - the evacuation limits in Appendix 1-5 are not possible because of leaks in the equipment or because the refrigerant being recovered would be substantially contaminated. <p>Verify that if evacuation is not to be done upon completion of the maintenance, service, or repair, and the maintenance, service, or repair is not major, the appliance is: (15)(16)(17)</p> <ul style="list-style-type: none"> - evacuated to a pressure no higher than 0 psig before it is opened if it is a high or very high-pressure appliance - pressurized to 0 psig before it is opened if it is a low pressure appliance, without using methods, such as nitrogen, that require subsequent purging. <p>Verify that if the evacuation limits in Appendix 1-5 are not possible because of leaks in the equipment or the refrigerant being recovered would be substantially contaminated, the person opening the appliance: (15)(16)(17)</p> <ul style="list-style-type: none"> - isolates leaking from nonleaking components whenever possible - evacuates leaking components to be opened to the lowest level that can be attained without substantially contaminating the refrigerant, in no case exceeding 0 psig. <p style="text-align: center;">...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
AIR EMISSIONS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>1-42. Appliances, except for small appliances, MVACs, and MVAC-like appliances, that are being disposed of, must be evacuated to the levels in Appendix 1-5 (40 CFR 82.150 and 82.156(a)(3)).</p> <p style="text-align: center;">...</p> | <p>Verify that appliances are evacuated to the levels listed in Appendix 1-5 prior to disposal. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>1-43. Specific evacuation limits must be met when opening small appliances for maintenance, service, or repair (40 CFR 82.150 and 82.156(a)(4)).</p> <p style="text-align: center;">...</p> | <p>Verify that when recycling and recovery equipment manufactured prior to 15 November 1993 is used, 80 percent of the refrigerant is recovered or the small appliance is evacuated to 4 in. Hg [13.55 kPa] vacuum. (15)(16)(17)</p> <p>Verify that when recycling and recovery equipment manufactured on or after 15 November 1993 is used, 90 percent of the refrigerant in the appliance is recovered when the compressor in the appliance is operating, or 80 percent of the refrigerant when the compressor is not operating, or that the small appliance is evacuated to 4 in. Hg [13.55 kPa] vacuum. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>1-44. Facilities which take the final step in the disposal process of a small appliance, room air conditioning, MVACs, or MVAC-like appliances must meet specific standards (40 CFR 82.156(f), 82.166(i), and 82.166 (m)).</p> <p style="text-align: center;">...</p> | <p>(NOTE: This includes, but is not limited to, scrap recyclers and landfill operators.)</p> <p>Verify that facilities: (15)(16)(17)</p> <ul style="list-style-type: none"> - recover any remaining refrigerant from the appliance - check that the refrigerant has been evacuated from the appliance or shipment of appliances previously by reviewing a signed statement of the person from whom the appliance or shipment of appliances is obtained that all refrigerant has been recovered. <p>Verify that copies of signed statements are retained for 3 yr. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>1-45. Facilities recovering refrigerant for purpose of disposal must meet specific standards (40 CFR 82.156(g) and 82.156(h)).</p> | <p>Verify that if the facility recovers refrigerant from MVACs and MVAC-like appliances for purposes of disposing of the appliance, the system pressure is reduced to or below 102 mm Hg [13.60 kPa] vacuum. (15)(16)(17)</p> <p>Verify that facilities recovering refrigerant from small appliances for the purpose of disposal of the appliance do one of the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - recover 90 percent of the refrigerant when the compressor in the appliance is operating - recover 80 percent of the refrigerant in the appliance when the compressor in the appliance is not operating - evacuate the small appliance to 4 in. Hg [13.55 kPa] vacuum. |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
AIR EMISSIONS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>1-46. Leaking appliances must be repaired when specific limits are exceeded (40 CFR 82.156 (i)).</p> <p style="text-align: center;">...</p> | <p>Verify that if the facility owns commercial and industrial process refrigeration equipment, all leaks are repaired if the equipment is leaking at a rate such that the loss of refrigerant will exceed 35 percent of the total charge during a 12-mo period. (15)(16)(17)</p> <p>Verify that other appliances normally containing more than 50 lb [22.68 kg] of refrigerant are repaired if the appliance is leaking at a rate such that the loss of refrigerant will exceed 15 percent of the total charge during a 12-mo period. (15)(16)(17)</p> <p>(NOTE: Leaks are not required to be repaired if, within 30 days, the facility has developed a 1-yr retrofit or retirement plan for the leaking equipment. The plan, or a legible copy, must be kept at the site of the equipment.)</p> <p>Verify that leaks have been repaired within 30 days of discovery or within 30 days of when the leak should have been discovered, if the facility intentionally shielded themselves from information which would have revealed a leak. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>Recordkeeping</p> <p>1-47. Facilities that sell or distribute any Class I or Class II substance for use as a refrigerant are required to retain invoices (40 CFR 82.166(a) and 82.166(m)).</p> <p style="text-align: center;">...</p> | <p>Verify that if the facility sells or distributes any Class I or Class II substance for use as a refrigerant, it retains invoices indicating the name of the purchaser, the date of sale, and the quantity of refrigerant purchased. (15)(16)(17)</p> <p>Verify that records are retained for 3 yr. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>1-48. Facilities servicing appliances normally containing 50 lb [22.68 kg] or more of refrigerant are required to supply the owner of the appliance with documentation as to how much refrigerant was added and the owner of the appliance must retain the servicing records (40 CFR 82.166(j) and 82.166(k)).</p> | <p>Verify that documentation of servicing and amounts of refrigerant added is provided to the appliance owner and retained for 3 yr. (15)(16)(17)</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

Appendix 1-1

Reid Vapor Pressure for Installation Geographic Area

Applicable Standards¹ 1992 and Beyond

| State | May | June | July | August | September |
|----------------------|-----|------|------|--------|-----------|
| Alabama | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Arizona | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Arkansas | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| California | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Colorado* | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Connecticut | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Delaware | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| District of Columbia | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Florida | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Georgia | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Idaho | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Illinois | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Indiana | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Iowa | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Kansas | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Kentucky | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Louisiana | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Maine | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Maryland | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Massachusetts | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Michigan | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Minnesota | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Mississippi | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Missouri | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Montana | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Nebraska | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Nevada | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| New Hampshire | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| New Jersey | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| New Mexico | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| New York | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| North Carolina | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| North Dakota | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Ohio | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Oklahoma | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Oregon | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |

¹ Standards are expressed in psi.

* The standards for 1992 and 1993 in the Denver-Boulder nonattainment area will be 9.0 for June 1 through September 15.

Appendix 1-1 (continued)

Applicable Standards

| State | May | June | July | August | September |
|----------------|-----|------|------|--------|-----------|
| Pennsylvania | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Rhode Island | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| South Carolina | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| South Dakota | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Tennessee | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Texas | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Utah | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Vermont | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Virginia | 9.0 | 7.8 | 7.8 | 7.8 | 7.8 |
| Washington | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| West Virginia | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Wisconsin | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |
| Wyoming | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 |

Appendix 1-2

Formula for Calculating SO₂ Emissions Limitations (40 CFR 60.42c(e)(2))

The following applies to steam generating units for which construction, modification, or reconstruction started after 9 June 1989 with a maximum design heat input capacity of 29 MW (100 MBtu/ h) or less, but greater than or equal to 2.9 MW (10 MBtu/ h).

$$E = \frac{(K_a H_a + K_b H_b + K_c H_c)}{H_a + H_b + H_c}$$

where:

E = the SO₂ emission limit expressed in ng/J or lb/ MBtu
heat input

K_a = 520 ng/J (1.2 lb/ MBtu)

K_b = 260 ng/J (0.60 lb/ MBtu)

K_c = 215 ng/J (0.50 lb/ MBtu)

H_a = the heat input from the combustion of coal, except coal
combusted in a facility that combusts only coal and
uses emerging technology, in J (MBtu)

H_b = the heat input from the combustion of coal, except coal
combusted in a facility that combusts only coal and
uses emerging technology, in J (MBtu)

H_c = the heat input from the combustion of oil, in J (MBtu).

Appendix 1-3

DOD Goals for Reduction, Releases, Procurement, and Use of Ozone-Depleting Substances

| Phase I | Phase II | Phase III | Phase IV | Phase V |
|---|---|-------------------------------|--|---|
| Institute plans to reduce unnecessary releases during operation, maintenance, and training. | Institute plans to eliminate procurement and use. | Stop use in new procurements. | Phaseout of current applications to 50 percent of 1986 levels. | Reduce use in all applications to zero. |

Goals for CFCs

| | Phase I | Phase II | Phase III | Phase IV | Phase V |
|---------------------------|----------|----------|-----------|----------|----------------------------|
| ³ Category III | Oct. '90 | Oct. '92 | Oct. '96 | Oct. '96 | Oct. 2000 |
| ² Category II | Oct. '90 | Oct. '93 | Oct. '97 | Oct. '97 | Oct. 2000* |
| ¹ Category I | Oct. '90 | Oct. '93 | Oct. '98 | Oct. '98 | Upon available substitutes |

Goals for Halons

| | | | | | |
|--------------|----------|----------|----------|----------|----------------------------|
| Category III | Oct. '90 | Oct. '90 | Oct. '90 | --- | Oct. '95 |
| Category II | Oct. '90 | Oct. '90 | Oct. '90 | Oct. '95 | Oct. 2000* |
| Category I | Oct. '90 | Oct. '90 | Oct. '95 | Oct. '95 | Upon available substitutes |

*Meets requirement from recycle or inventory.

(NOTE: All phaseout goals are dependent on the timely development of suitable substitutes for ozone-depleting substances. To prevent interruption of supplies for mission-critical uses (Category I), these uses will be identified and plans initiated not later than October 1990 to recycle existing stocks and to initiate stockpiling of sufficient quantities of ozone-depleting substances to allow operation for the useful life of the weapons system.)

¹Category I: *Mission-Critical Uses* - The highest priority uses will be those that are mission critical. Mission-critical uses have a direct impact on combat mission capability and include uses that are integral to combat mission assets or that affect operability of these assets. Mission-critical uses include cooling operational suppression systems in tactical vehicle crew compartments to protect the lives of mission-critical personnel.

²Category II: *Essential Uses* - Essential uses include those applications that have an indirect effect on combat mission assets and play an auxilliary role in ensuring the operability of those assets. Essential uses include process cooling applications and charging portable fire extinguishers for electronic area protection.

³Category III: *NonEssential Uses* - This category includes all nonessential uses. Nonessential uses include methods of comfort cooling in family housing and installation support activities.

Appendix 1-4

Controlled Substances and Ozone Depletion Weights (40 CFR 82, Appendix A and Appendix B)

| Controlled Substance | Ozone Depletion Weight |
|---|------------------------|
| <i>Class I</i> | |
| Group I | |
| CFC-1 ₃ - Trichlorofluoromethane (CFC-11) | 1.0 |
| CF ₂ Cl ₂ - Dichlorodifluoromethane (CFC-12) | 1.0 |
| C ₂ F ₃ Cl ₃ - Trichlorotrifluoroethane (CFC-113) | 0.8 |
| C ₂ F ₄ Cl ₂ - Dichlorotetrafluoroethane (CFC-114) | 1.0 |
| C ₂ F ₅ Cl - (Mono)chloropentafluoroethane (CFC-115) | 0.6 |
| All isomers of the above chemicals | |
| Group II | |
| CF ₂ ClBr - Bromochlorodifluoromethane (Halon 1211) | 3.0 |
| CF ₃ Br - Bromotrifluoromethane (Halon 1301) | 10.0 |
| C ₂ F ₄ Br ₂ - Dibromotetrafluoroethane (Halon 2402) | 6.0 |
| All isomers of the above chemicals | |
| Group III | |
| CF ₃ Cl - Chlorotrifluoromethane (CFC-13) | 1.0 |
| C ₂ FCl ₅ - (CFC-111) | 1.0 |
| C ₂ F ₂ Cl ₄ - (CFC-112) | 1.0 |
| C ₃ FCl ₇ - (CFC-211) | 1.0 |
| C ₃ F ₂ Cl ₆ - (CFC-212) | 1.0 |
| C ₃ F ₃ Cl ₅ - (CFC-213) | 1.0 |
| C ₃ F ₄ Cl ₄ - (CFC-214) | 1.0 |
| C ₃ F ₅ Cl ₃ - (CFC-215) | 1.0 |
| C ₃ F ₆ Cl ₂ - (CFC-216) | 1.0 |
| C ₃ F ₇ Cl - (CFC-217) | 1.0 |
| All isomers of the above chemicals | |

Appendix 1-4 (continued)

| Controlled Substance | Ozone Depletion Weight |
|--|------------------------|
| Group IV | |
| CCl ₄ - Carbon Tetrachloride | 1.1 |
| Group V | |
| C ₂ H ₃ Cl ₃ -1,1,1-Trichloroethane (Methyl Chloroform) All isomers of the above chemicals | 0.1 |
| Group VI | |
| CH ₃ Br - Bromomethane (Methyl Bromide) | 0.7 |
| Group VII | |
| CHFBr ₂ | 1.00 |
| CHF ₂ Br (HBFC-22B1) | 0.74 |
| CH ₂ FBr | 0.73 |
| C ₂ HFBr ₄ | 0.3 - 0.8 |
| C ₂ HF ₂ Br ₃ | 0.5 - 1.8 |
| C ₂ HF ₃ Br ₂ | 0.4 - 1.6 |
| C ₂ HF ₄ Br | 0.7 - 1.2 |
| C ₂ H ₂ FBr ₃ | 0.1 - 1.1 |
| C ₂ H ₂ F ₂ Br ₂ | 0.2 - 1.5 |
| C ₂ H ₂ F ₃ Br | 0.7 - 1.6 |
| C ₂ H ₃ FBr ₂ | 0.1 - 1.7 |
| C ₂ H ₃ F ₂ Br | 0.2 - 1.1 |
| C ₂ H ₄ FBr | 0.07 - 0.1 |
| C ₃ HFBr ₆ | 0.3 - 1.5 |
| C ₃ HF ₂ Br ₅ | 0.2 - 1.9 |
| C ₃ HF ₃ Br ₄ | 0.3 - 1.8 |
| C ₃ HF ₄ Br ₃ | 0.5 - 2.2 |
| C ₃ HF ₅ Br ₂ | 0.9 - 2.0 |
| C ₂ HF ₆ Br | 0.7 - 3.3 |
| C ₃ H ₂ FBR ₅ | 0.1 - 1.9 |
| C ₃ H ₂ F ₂ BR ₄ | 0.2 - 2.1 |
| C ₃ H ₂ F ₃ Br ₃ | 0.2 - 5.6 |

Appendix 1-4 (continued)

Controlled Substance

Ozone Depletion Weight

| | |
|-----------------|------------|
| $C_3H_2F_4Br_2$ | 0.3 - 7.5 |
| $C_3H_2F_5Br$ | 0.9 - 1.4 |
| $C_3H_3FBR_4$ | 0.06 - 1.9 |
| $C_3H_3F_2Br_3$ | 0.1 - 3.1 |
| $C_3H_3F_3Br_2$ | 0.1 - 2.5 |
| $C_3H_3F_4Br$ | 0.3 - 4.4 |
| $C_3H_4FBr_3$ | 0.03 - 0.3 |
| $C_3H_4F_2Br_2$ | 0.1 - 1.0 |
| $C_3H_4F_3Br$ | 0.07 - 0.8 |
| $C_3H_5FBr_2$ | 0.04 - 0.4 |
| $C_3H_5F_2Br$ | 0.07 - 0.8 |
| C_3H_6FB | 0.02 - 0.7 |

Class II

| | |
|---|---------|
| $CHFCl_2$ - Dichlorofluoromethane (HCFC-21) | *[res.] |
| CHF_2Cl - Chlorodifluoromethane (HCFC-22) | 0.05 |
| CH_2FCl - Chlorofluoromethane (HCFC-31) | [res.] |
| C_2HFCl_4 - (HCFC-121) | [res.] |
| $C_2HFCl_2Cl_3$ - (HCFC-122) | [res.] |
| $C_2HF_3Cl_2$ - (HCFC-123) | 0.02 |
| C_2HF_4Cl - (HCFC-124) | 0.02 |
| $C_2H_2FCl_3$ - (HCFC-131) | [res.] |
| $C_2H_2F_2Cl_2$ - (HCFC-132b) | [res.] |
| $C_2H_2F_2Cl$ - (HCFC-133a) | [res.] |
| $C_2H_3FCl_2$ - (HCFC-141b) | 0.12 |
| $C_2H_3F_2Cl$ - (HCFC-142b) | 0.06 |
| C_3HFCl_6 - (HCFC-221) | [res.] |
| $C_3HF_2Cl_5$ - (HCFC-222) | [res.] |
| $C_3HF_3Cl_4$ - (HCFC-223) | [res.] |
| $C_3HF_4Cl_3$ - (HCFC-224) | [res.] |
| $C_3HF_5Cl_2$ - (HCFC-225ca) | [res.] |
| $C_3HF_5Cl_2$ (HCFC-225cb) | [res.] |

Appendix 1-4 (continued)

| Controlled Substance | Ozone Depletion Weight |
|---|------------------------|
| C ₃ HF ₆ Cl - (HCFC-226) | [res.] |
| C ₃ H ₂ FCl ₅ - (HCFC-231) | [res.] |
| C ₃ H ₂ F ₂ Cl ₄ - (HCFC-232) | [res.] |
| C ₃ H ₂ F ₃ Cl ₃ - (HCFC-233) | [res.] |
| C ₃ H ₂ F ₄ Cl ₂ - (HCFC-234) | [res.] |
| C ₃ H ₂ F ₅ Cl - (HCFC-235) | [res.] |
| C ₃ H ₃ FCl ₄ - (HCFC-241) | [res.] |
| C ₃ H ₃ F ₂ Cl ₃ - (HCFC-242) | [res.] |
| C ₃ H ₃ F ₃ Cl ₂ - (HCFC-243) | [res.] |
| C ₃ H ₃ F ₄ Cl - (HCFC-244) | [res.] |
| C ₃ H ₄ FCl ₃ - (HCFC-251) | [res.] |
| C ₃ H ₄ F ₂ Cl ₂ - (HCFC-252) | [res.] |
| C ₃ H ₄ F ₃ Cl - (HCFC-253) | [res.] |
| C ₃ H ₅ FCl ₂ - (HCFC-261) | [res.] |
| C ₃ H ₅ F ₂ Cl - (HCFC-262) | [res.] |
| C ₃ H ₆ FCI - (HCFC-271) | [res.] |
| All isomers of the above chemicals | [res.] |

***[res.] means reserve. It designates that the ozone depletion weight number has been reserved for a future rating.**

Appendix 1-5

Required Levels of Evacuation for Appliances (Except for small appliances, MVACs, and MVAC-like appliances) (40 CFR 82.156, Table 1)

Inches of Hg vacuum (relative to standard and atmospheric pressure of 29.9 in. Hg)

| Type of Appliance | Using recovery or recycling equipment manufactured or imported before 15 November 1993 | Using recovery or recycling equipment manufactured or imported on or after 15 November 1993 |
|---|--|---|
| HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant | 0 | 0 |
| HCFC-22 appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant | 0 | 0 |
| HCFC-22 appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant | 4 | 10 |
| Other High-pressure appliance, or isolated component of such appliance, normally containing less than 200 lb of refrigerant | 4 | 10 |
| Other High-pressure appliance, or isolated component of such appliance, normally containing 200 lb or more of refrigerant | 4 | 15 |
| Very High-pressure appliance | 0 | 0 |
| Low-pressure appliance | 25 | 25 mm Hg absolute |

Section 2

Cultural and Historic Resources Management

SECTION 2

CULTURAL AND HISTORIC RESOURCES MANAGEMENT

A. Applicability

This section applies to any U.S. Army Corps of Engineers (USACE) facility with owned or controlled property. Plans and programs for protection and management of cultural resources that include historic and prehistoric properties are contained in this section.

B. Federal Legislation

There are many Federal statutes and regulations concerning the preservation of historic and prehistoric properties. The provisions of the following statutes and their implementing regulations outline a comprehensive assertion of national preservation policy and the means to reach the goal of that policy.

- *Antiquities Act of 1906*. This Act, (Public Law (PL) 59-209; 16 U.S. Code (USC) 431-433), provides for the protection of historic and prehistoric ruins and objects of antiquity on Federal lands and authorizes scientific investigation of antiquities on Federal lands that are subject to permits and other regulatory requirements. Paleontological resources are covered by this Act.
- *Historic Sites Act of 1935*. This Act, (PL 74-292; 16 USC 470-470w-6), authorizes the designation of national historic sites and landmarks, authorizes interagency efforts to preserve historic resources, and establishes a maximum fine of \$500 for violations of the Act.
- *National Historic Preservation Act (NHPA) of 1966*. This Act, (PL 89-665; 16 USC 470-470w-6), establishes historic preservation as a national policy and defines it as the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, or engineering. The amendments of 1980 establish guidelines for: the preservation of nationally significant properties, curation of artifacts, data documentation of historic properties, and preservation of Federally owned historic sites; designation of a Preservation Officer in each Federal agency; authorization of the inclusion of historic preservation costs in project planning costs; and authorization of the withholding of sensitive data on historic properties when necessary.

Section 106 provides Federal agencies with direction for undertakings that affect properties listed, or eligible for listing, on the National Register. The

section is implemented by regulations issued by the Advisory Council (36 Code of Federal Regulations (CFR) 800). Section 110 makes Federal agencies responsible for preservation of historic properties they own or control and requires Federal agencies to locate, inventory, and nominate all properties that may qualify for the National Register.

- *National Environmental Policy Act (NEPA) of 1969*. This Act, (PL 91-190; 42 USC 4321-4347) states the policy of the Federal government to preserve important historical, cultural, and natural aspects of our national heritage and requires consideration of environmental concerns during project planning and execution. This act requires Federal agencies to prepare an Environmental Impact Statement (EIS) for every major Federal action that significantly affects the quality of the human environment, including both cultural and historic resources. It is implemented by regulations issued by the Council on Environmental Quality (CEQ) (40 CFR 1500-08) and Army Regulation (AR) 200-2.
- *Executive Order (EO) 11593*. This EO, *Protection and Enhancement of the Cultural Environment*, 13 May 1971 (reprinted as a note at 16 USC 470) directs Federal agencies to: provide leadership in preserving, restoring, and maintaining the historical and cultural environment of the Nation; ensure the preservation of historic resources; locate, inventory, and nominate to the National Register all properties under their control that meet the criteria for nomination; and ensure that historic resources are not inadvertently damaged, destroyed, or transferred before the completion of inventories and evaluation for the National Register.
- *Archeological and Historic Preservation Act of 1974*. This Act, (PL 93-291 (amends PL 86-523); 16 USC 469-469c), directs Federal agencies to notify the Secretary of the Interior (SOI) when they find that any Federal construction project or Federally licensed activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archeological data. It also provides criteria for funding historical and archeological protection for such projects.
- *Public Buildings Cooperative Use Act of 1976*. This Act, (PL 95-541; 40 USC 490, 601a, 606, 611 and 612a), encourages adaptive reuse of historical buildings as administrative facilities for Federal agencies or activities.
- *American Indian Religious Freedom Act of 1978*. This Act, (PL 95-341; 42 USC 1996), states the policy of the United States to protect and preserve for American Indians their inherent rights of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and native Hawaiian. These rights include, but are not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremony and traditional rites.

- *Native American Graves Protection and Repatriation Act of 1990*. This Act, (PL 101-601), requires Federal agencies to establish procedures for identifying Native American groups associated with cultural items on Federal lands, to inventory human remains and associated funerary objects in Federal possession, and to return such items upon request to the affiliated groups. The law also requires that any discoveries of cultural items covered by the Act shall be reported to the head of the Federal entity, who shall notify the appropriate Native American tribe or organization and cease activity in the area of discovery for at least 30 days.
- *Archeological Resources Protection Act (ARPA) of 1979*. This Act, (PL 96-95; 16 USC 470aa-11), prohibits the removal, sale, receipt, and interstate transportation of archeological resources obtained illegally (without permits) from public or Indian lands and authorizes agency permit procedures for investigations of archeological resources on public lands under the agency's control. PL 100-555 amends *ARPA* by addition of Section 14 which states that the Secretaries of the Interior, Agriculture, and Defense (and their respective employees and agents) shall: develop plans for surveying the lands under their control to determine the nature and extent of archeological resources; prepare a schedule for surveying those lands that are likely to contain the most scientifically valuable archeological resources; and develop documents for reporting suspected violations of the *ARPA*. *The Protection of Archeological Resources: Uniform Regulations*, 18 CFR 1312, 32 CFR 229, 36 CFR 296, and 43 CFR 7, implements the *ARPA*.
- *Abandoned Shipwreck Act of 1987*. This Act, PL 100-298, defines and clarifies access and ownership rights and directs the Director of the National Park Service to prepare guidelines, in consultation with appropriate public and private section interests, to administer and manage underwater resources.

C. State/ Local Regulations

At the state level, the State Historic Preservation Officer (SHPO) provides assistance in determining cultural significance and eligibility for the National Register, but may also nominate properties, irrespective of ownership. The SHPO must be consulted during all cultural resources planning.

States may also issue regulations designating state historical sites.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- ER 1130-2-433, *Collection Management and Curation of Archeological and Historical Data*. This regulation provides guidance concerning the storage and curation of archeological and historic data, materials, and records recovered in conjunction with Corps Civil Works activities.
- ER 1130-2-438, *Historic Preservation Program*. This regulation establishes the Corps of Engineers Historic Preservation Program for construction, operations, and maintenance activities at Civil Works projects.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- **Historical Properties** - All Federal Agencies are required to establish a program to locate, inventory, and nominate to the SOI all properties under the agency's control that qualify for inclusion on the National Register of Historic Places. Historic properties held in fee by the Federal government, and under the jurisdiction of the Corps, are required to be protected and managed and to have damage mitigated. These requirements also apply to property held in less than fee by the Federal government, whenever Corps activities have an adverse impact on the property. Facilities are required to take into account the effects of a new undertaking on property listed in the National Register before beginning an undertaking. The facility is required to consult the SHPO during identification, location, and evaluation of historic properties and in assessing the effect of an undertaking on historic property (36 CFR 60.9(7)(f), 60.13, 800.1, 800.4, and 800.5; 32 CFR 229.4(a) and 229.5(b)).
- **Archeological Requirements** - When unrecorded historic property is discovered during construction or other undertakings, work must halt until the situation is properly evaluated. Archeological resources on either public or Indian lands cannot be excavated, removed, damaged, or otherwise altered without permit (ER 1130-2-438 para 3, 32 CFR 229.4(a), and 229.5(b)).
- **Plans and Documentation** - The master plan is required to include the management of cultural resources. The operational management plan (OMP) is required to address all operational projects concerning cultural resources in the master plan. If the master plan and/or the OMP are released to the public, they shall not contain the exact location of historic properties. The Cultural

Resources Coordinator should be involved with the master plan and in the preparation, updating and implementation of the OMP. Corps Districts will have a Historic Properties Management Plan (HPMP) for each operation project (ER 1130-2-435, para 7c, ER 1130-2-438, para 7a, ER 1130-2-400, para 9 and Appendix B, ER 1130-2-438, para 7g and para 11).

- Native American Graves and Artifacts - Federal law protects Native American graves and artifacts. Corps facilities are required to take measures to identify and protect them, and to cooperate with Native American groups in returning such items to their rightful owners (PL 101-601, Section 3d, Section 5, and Section 6).
- Collection Management and Curation - Archeological and historic collections owned or controlled by the Corps are required to be assessed and evaluated. Facilities responsible for long-term management and preservation of collections are covered by regulations dealing with curation, recordkeeping, long-term curatorial services, repository security, curatorial staff qualifications, use of collections, and conduct of inspections and inventories of the collections. Collection management centers are also required to write annual reports updating the status of their collections (ER 1130-2-433, para 8 and para 12b; 36 CFR 79; and ER 1130-2-433, para 10 and para 12a).

F. Key Compliance Definitions

- *Advisory Council on Historic Preservation (ACHP)* - the Council established by Title II of the *NHPA* to advise the President and Congress, encourage private and public interest in cultural preservation, and comment on Federal agency action under Section 106 of the *NHPA* (36 CFR 65.3).
- *Archeological Resource* - any material remains of prehistoric or historic human life or activities. Such resources include, but are not limited to: pottery, basketry, bottles, weapons, weapon projectiles, tools, structures or portions of structures, pit houses, rock paintings, rock carvings, intaglios, graves, human skeletal materials, or any portion or piece of any of the foregoing items (16 USC 470bb).
- *Associated Funerary Objects* - objects that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, and both the human remains and associated funerary objects are presently in the possession or control of a Federal agency or museum, except for other items exclusively made for burial purposes or to contain human remains, shall be considered as associated funerary objects (PL 101-601, Section 2).

- *Associated Records* - original records, or copies thereof, that are prepared or assembled and document efforts to locate, evaluate, record, study, preserve, or recover materials from a prehistoric or historic resource (36 CFR 79.4 and ER 1130-2-433, para 4a).
- *Building* - a structure created to shelter any form of human activity, such as a house, barn, church, hotel, or similar structure. *Building* may refer to a historically related complex such as a courthouse and jail, or a house and barn (36 CFR 60.3).
- *Burial Site* - any natural or prepared physical location, whether originally below, on, or above the surface of the earth, into which, as a part of the death rite or ceremony of a culture, individual human remains are deposited (PL 101-601, Section 2).
- *Collection* - material remains that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation, or other study (36 CFR 79.4).
- *Cultural Affiliation* - a relationship of shared group identity which can be reasonably traced historically or prehistorically between a present day Indian tribe or Native Hawaiian organization and an identifiable earlier group (PL 101-601, Section 2).
- *Cultural Items* - associated and unassociated funerary objects, sacred objects, and cultural patrimony (PL 101-106, Section 2(3)(a-d)).
- *Cultural Patrimony* - an object having ongoing historical, traditional, or cultural importance central to a Native American group or culture itself, rather than property owned by an individual Native American, and which, therefore, cannot be alienated, appropriated, or conveyed by any individual regardless of whether or not the individual is a member of the Indian tribe or Native Hawaiian organization (PL 101-601, Section 2).
- *Curatorial Services* - managing and preserving a collection according to professional museum and archival practices (36 CFR 79.4).
- *Determination of Eligibility* - a decision by the Department of the Interior (DOI) that a district, site, building, structure, or object meets the National Register criteria for evaluation although the property is not formally listed in the National Register (36 CFR 60.3).

- *Effect* - direct effects are caused by the undertaking and occur at the place and time of the undertaking. Indirect effects are those caused by the undertaking that are later in time or further removed in distance, but are still reasonably foreseeable (50 CFR 1508.8).
- *Endangered Property* - a historic property that is, or is about to be, subjected to a major impact that will destroy or seriously damage the qualities of significance that make it eligible for National Historic Landmark or National Register of Historic Places designation (36 CFR 65.3).
- *Federal Agency Official* - any officer, employer, or agent officially representing the secretary of the department or the head of any other agency or instrumentality of the United States having primary management authority over a collection that is subject to 36 CFR 79 (36 CFR 79.4).
- *Federal Lands* - any land other than tribal lands which are controlled or owned by the United States, including lands selected by, but not yet conveyed to, Alaska Native corporations and groups pursuant to the *Alaska Native Claims Settlement Act* of 1971 (PL 101-601, Section 2).
- *Historic Preservation* - identification, evaluation, documentation, curation, acquisition, protection, rehabilitation, restoration, management, stabilization, maintenance, recording, and reconstruction of cultural resources, and any combination of the foregoing (16 USC 470w(8)).
- *Historic Property or Resource* - any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register; such term includes artifacts, records, and remains which are related to such a district, site, building, structure, or object (16 USC 470W).
- *Indian Lands* - all lands under the jurisdiction or control of an Indian tribe (36 CFR 800.2).
- *Indian Tribe or Tribe* - any Indian Tribe, band, nation, or other organized group or community including a Native village, Regional corporation or Village Corporation, as those terms are defined in Section 3 of the *Alaska Native Claims Settlement Act* (42 USC 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians (*NHPA*, Section 301(4)).
- *Inventory* - an itemized list of human remains and funerary objects along with their geographical and cultural affiliations (PL 101-601, Section 5(a) and (e)).

- *Landmark* - a National Historic Landmark is a district, site, building, structure, or object, in public or private ownership, judged by the SOI to possess national significance in American history, archeology, architecture, engineering, and culture, and is so designated by the Secretary (36 CFR 65.3).
- *Material Remains* - artifacts, objects, specimens, and other physical evidence that are excavated or removed in connection with efforts to locate, evaluate, document, study, preserve, or recover a prehistoric or historic resource. Classes of material remains that may be in a collection include, but are not limited to (36 CFR 79.4):
 1. components of structures and features (such as houses, mills, piers, fortifications, earthworks, and mounds)
 2. intact or fragmentary artifacts of human manufacture
 3. intact or fragmentary natural objects used by humans (such as rock crystals, feathers and pigments)
 4. byproducts, waste products, or debris resulting from manufacture or use of manmade or natural materials
 5. organic materials (such as vegetable and animal remains)
 6. human remains
 7. components of petroglyphs, pictographs, intaglios or other works of artistic or symbolic representation
 8. components of shipwrecks
 9. environmental and chronometric specimens
 10. paleontological specimens that are found in direct physical relationship with a prehistoric or historic resource.
- *Museum* - any institution or state or local government agency (including any institution of higher learning) that receives Federal funds and has possession of, or control over, Native American cultural items. Such term does not include the Smithsonian Institution or any other Federal agency (PL 101-601, Section 2).
- *National Historic Landmarks Program* - the program that identifies, designates, recognizes, lists, and monitors National Historic Landmarks, conducted by the Secretary through the National Park Service (36 CFR 65.3).
- *National Register of Historic Places (National Register)* - the listing of districts, sites, buildings, structures, and objects of national, state, or local significance in American history, architecture, archeology, or culture, which is maintained by the SOI (Keeper of the Register) (36 CFR 65.3).
- *Native American* - of, or relating to, a tribe, people, or culture that is indigenous to the United States (PL 101-106, Section 2).

- *Native Hawaiian* - any individual who is a descendent of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the state of Hawaii (PL 101-106, Section 2).
- *Nominate* - to complete and submit a National Register of Historic Places form proposing that a resource be included in the National Register. Nominations can be made for individual resources, multiple resources, or thematic groups (36 CFR 60.4).
- *Preservation* - identification, evaluation, recordation, documentation, curation, acquisition, protection management, rehabilitation, restoration, stabilization, maintenance, and reconstruction of any constituents of the foregoing activities (16 USC 470W).
- *Property* - a site, building, object, structure, or a collection of the foregoing, that forms a district (36 CFR 65.3).
- *Qualified Museum Professional* - a person who possesses knowledge, experience, and demonstrable competence in museum methods and techniques appropriate to the nature and content of the collection under the person's management and care and commensurate with the person's duties and responsibilities (36 CFR 79.4).
- *Religious Remains* - material remains that a Federal Agency official has determined are of traditional, religious, or sacred importance to an Indian tribe or other group because of customary use in religious rituals or spiritual activities. This determination is made in consultation with appropriate Indian tribes or other groups (36 CFR 79.4).
- *Repository* - a facility such as a museum, archeological center, laboratory, or storage facility managed by a university, college, museum, other educational or scientific institution, a Federal, state, or local government agency, or Indian tribe that can provide professional, systematic, and accountable curatorial services on a long-term basis (36 CFR 79.4).
- *Restoration* - the act or process of accurately recovering the form and details of property and its setting as it appeared at a particular period of time by means of the removal of later work or by the replacement of missing earlier work (36 CFR 68.2).
- *Sacred Objects* - specific ceremonial objects which are needed by traditional Native American religious leaders for the practice of their traditional Native American religions by their present day adherents (PL 101-601, Section 2).

- *Section 106 Consultation* - a compliance procedure in which an agency requests the comments of the SHPO and/or the ACHP when an undertaking may affect a property listed on, or eligible for, the National Register (36 CFR 800.3 through 800.9).
- *Significant* - having a characteristic that makes a property eligible for listing on the National Register (DOD Directive 4710.0).
- *State Historic Preservation Officer (SHPO)* - the official who is responsible for administering the *NHPA* within the state of jurisdiction, or a designated representative authorized to act for the SHPO (36 CFR 60.3).
- *Tribal Official* - the chief executive officer or any officer, employee, or agent officially representing an Indian tribe (36 CFR 79.4).
- *Unassociated Funerary Objects* - objects that, as a part of the death rites or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, where the remains are not in the possession or control of the Federal agency or museum and the objects can be identified by a preponderance of the evidence as related to specific individuals or families or to known human remains or, by a preponderance of the evidence, as having been removed from a specific burial site of an individual culturally affiliated with a particular Indian tribe (PL 101-106, Section 2).
- *Undertaking* - a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those (*NHPA* Section 301(7)):
 1. carried out by, or on behalf of, the agency,
 2. carried out with Federal financial assistance,
 3. requiring a Federal permit, license, or approval
 4. subject to state or local regulations administered pursuant to a delegation of approval by a Federal agency.

CULTURAL AND HISTORIC RESOURCES MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS: (a) |
|---|---------------------------------|---|
| All Facilities | 2-1 through 2-3 | (5)(6)(10)(11)(13)(15)(16) |
| Properties | 2-4 through 2-10 | (1)(2)(5)(6)(11)(13)(15) |
| Documentation | 2-11 through 2-15 | (1)(4)(6)(11)(13)(15) |
| Religious/Heritage Access | 2-16 | (11)(15)(16) |
| Native American Graves and Artifacts | 2-17 | (1)(2)(5)(6)(11) |
| Collection Management and Curation | 2-18 through 2-29 | (1)(2)(11) |

(a) CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

CULTURAL AND HISTORIC RESOURCES MANAGEMENT

Records to Review

- For construction activities: documentation of finding of no adverse effect, finding of adverse effect, or Memorandum of Agreement (MOA) with the SHPO; or requests for comment when there is no agreement on historic properties.
- Cultural Resources Inventory/Survey
- Master Plan
- Land Use Plan
- Land Management Plan
- Environmental Assessments
- Environmental Impact Documentation
- Grounds Maintenance Contracts
- Historic Preservation Plan

Physical Features to Inspect

- Sites of historic, archeological, or Native American interest (designation, protection, and interpretation)
- Buildings and structures of potential historical significance (National, state, or local)

People to Interview

- Natural Resources Manager (Division, District)
- Engineering
- Operations (Division, District)
- Environmental Compliance Coordinator (ECC)
- Cultural/Historic Resources
- Planning
- Project Resource Manager
- Facility Managers

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. The chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 2-1 through 2-28 | 2-1 through 2-15, 2-17 through 2-29 |
| no match | 2-16 |

| | | | |
|---------------------------------|---|--------------|---------------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: CULTURAL AND HISTORIC RESOURCES MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

**COMPLIANCE CATEGORY:
CULTURAL AND HISTORIC RESOURCES MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>ALL FACILITIES</p> <p>2-1. Determine actions or changes since previous review of cultural and historic resources (GMP).</p> <p style="text-align: center;">...</p> <p>2-2. Facilities should have access to a current file of applicable Federal, engineer, and state/local regulations for cultural resources management (GMP).</p> <p style="text-align: center;">...</p> <p>2-3. Facilities are required to comply with state and local regulations (ER 1165-2-116, para 3).</p> <p style="text-align: center;">...</p> | <p>Determine if noncompliance issues have been resolved by examining a copy of the previous review. (5)(6)(13)(15)(16)</p> <p style="text-align: center;">...</p> <p>Determine if the following documents are accessible and kept current at the facility or at district or division offices: (6)(10)(11)(13)(15)</p> <ul style="list-style-type: none"> - 32 CFR 229, <i>Protection of Archeological Resources: Uniform Regulations.</i> - 36 CFR 60, <i>National Register of Historic Places.</i> - 36 CFR 79, <i>Curation of Federally-owned and Administered Archeological Collections.</i> - 36 CFR 800, <i>Protection of Historic and Cultural Properties.</i> - ER 1130-2-400, <i>Management of Natural Resources and Outdoor Recreation at Civil Works Water Resources Projects.</i> 1 June 1986. - ER 1130-2-433, <i>Collection Management and Curation of Archeological and Historical Data.</i> 30 April 1991. - ER 1130-2-435, <i>Preparation of Project Master Plans.</i> 30 December 1987. - ER 1130-2-438, <i>Historic Preservation Program.</i> 26 October 1987. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects.</i> 28 February 1968. - Applicable state and local regulations. <p style="text-align: center;">...</p> <p>Verify that the facility is complying with state and local requirements. (5)(6)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)(6)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - designation of historic sites - protection of historic sites.) <p style="text-align: center;">...</p> |

DIVISION: (1) Natural Resources Management (2) Engineering (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (10) Operations (11) Cultural/Historic Resources (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
CULTURAL AND HISTORIC RESOURCES MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>PROPERTIES</p> <p>2-4. All Federal Agencies are required to establish a program to locate, inventory, and nominate to the SOI all properties under the agency's ownership or control that appear to qualify for inclusion on the National Register of Historic Places (36 CFR 60.9).</p> <p style="text-align: center;">...</p> <p>2-5. On land held in fee by the Federal government under the administration and jurisdiction of the Corps, historic properties are required to be protected and managed and have damage mitigated (ER 1130-2-438, para 7f).</p> <p style="text-align: center;">...</p> <p>2-6. On lands held in less than fee by the Federal government under the Corps of Engineers jurisdiction, historic properties are required to be protected and managed and have damage mitigated whenever activities generated by the Corps will have an adverse impact on those properties (ER 1130-2-438, para 7f).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has a program to locate, inventory, and nominate properties that includes the following: (5)(6)</p> <ul style="list-style-type: none"> - assignment of responsibility for recognizing and maintaining cultural resources - inventory and evaluation of all known cultural resources - identification of the likelihood (based on scientific study) of the presence of other significant cultural resources - description of the facility's strategies for maintaining cultural resources and the methods used for compliance with this regulation - clear identification of the impacts on cultural resources of ongoing projects and the resolutions to those impacts. <p>Determine if the SHPO is given the opportunity to review and comment on all aspects of the program. (5)(6)</p> <p style="text-align: center;">...</p> <p>Verify that historic properties are being protected and managed and that damage to these properties is being mitigated. (1)(2)(5)(6)</p> <p style="text-align: center;">...</p> <p>Determine if the facility impacts land held in less than fee by the Federal government. (1)(2)(5)(6)</p> <p>Verify that adverse impact from the Corps is minimized to protect historic properties. (1)(2)(5)(6)</p> <p style="text-align: center;">...</p> |

DIVISION: (1) Natural Resources Management (2) Engineering (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (10) Operations (11) Cultural/Historic Resources (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
CULTURAL AND HISTORIC RESOURCES MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>2-7. When a previously unrecorded historic property is discovered in the course of construction or while implementing other undertakings, including routine operations and maintenance, the work must be halted until the situation is properly evaluated (ER 1130-2-438, para 13).</p> <p style="text-align: center;">...</p> | <p>Verify that work is halted when a previously unrecorded historic property is uncovered. (1)(2)(5)(6)</p> <p style="text-align: center;">...</p> |
| <p>2-8. Archeological resources located on public lands or Indian lands cannot be excavated, removed, damaged, or otherwise altered or defaced without a permit (32 CFR 229.4(a) and 229.5(b)).</p> <p style="text-align: center;">...</p> | <p>Determine if there is currently any excavation, removal, or disturbance of archeological resources on the facility. (1)(2)(5)(6)</p> <p>Verify that any actions taken in relationship to archeological resources have been permitted. (1)(2)(5)(6)</p> <p>Verify that the facility is following the parameters of the permit. (1)(2)(5)(6)</p> <p>(NOTE: A permit is not required for the following activities:</p> <ul style="list-style-type: none"> - activities being conducted on public lands under other permits, leases, licenses, or entitlements for use when those activities are exclusively for activities other than excavation and/or removal of archeological resources even if those activities might disturb the archeological resources - the collection, for private purposes, of any rock, coin, bullet, or mineral that is not an archeological resource if the collection of the item does not result in the disturbance of an archeological resource - excavations done by an Indian tribe or member of an Indian tribe on the lands of that tribe.) <p style="text-align: center;">...</p> |
| <p>2-9. Prior to the start of a new undertaking, facilities are required to take into account the effects of the undertaking on property included in or eligible for the National Register of Historic Places (36 CFR 800.1).</p> <p style="text-align: center;">...</p> | <p>Verify that prior to the start of a new undertaking, the impact of that undertaking on property included in or eligible for the National Register of Historic places has been investigated through the Section 106 process of consultation and documentation. (1)(2)(5)(6)</p> <p>Verify that the facility determines the area of potential effect for every undertaking. (1)(2)(5)(6)</p> <p>Determine if an MOA has been drafted, and review a copy for compliance. (1)(2)(5)(6)</p> <p style="text-align: center;">...</p> |

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| <p>2-10. The facility is required to consult with the SHPO during the identification, location, and evaluation of historic properties and in assessing the effect of any undertaking on historic property (36 CFR 800.4 and 800.5).</p> <p style="text-align: center;">...</p> | <p>Determine if the SHPO and staff have been consulted during all cultural resources planning, including: (6)(11)(13)(15)</p> <ul style="list-style-type: none"> - identification of cultural properties - research design - applying criteria of National Register - requesting a determination of eligibility from the Keeper (Chief of Registration) of the National Register when an agency and a SHPO disagree on eligibility interaction with the ACHP - determination-of-effect in a single property compliance procedure. <p style="text-align: center;">...</p> |
| <p style="text-align: center;">DOCUMENTATION</p> <p>2-11. Cultural resources and their management are required to be a part of the master plan (ER 1130-2-435, para 7c).</p> <p style="text-align: center;">...</p> | <p>Verify that the master plan includes management policies for cultural resources at the project. (11)(13)(15)</p> <p style="text-align: center;">...</p> |
| <p>2-12. The OMP is required to address all operational projects concerning cultural resources, as indicated in the master plan (ER 1130-2-438, para 7a, ER 1130-2-400, para 9 and Appendix B).</p> <p style="text-align: center;">...</p> | <p>Verify that cultural resource operational projects are included in the OMP in the portion reviewing park management. (11)(13)(15)</p> <p style="text-align: center;">...</p> |
| <p>2-13. The master plan and/or OMP will not contain an exact location or disposition of historic properties on project fee and easement lands if the master plan or OMP are released to the public (ER 1130-2-438, para 7g).</p> <p style="text-align: center;">...</p> | <p>Verify that the location and disposition of historic properties on project fee and easement lands is not included in any copies of the master plan or OMP issued to the public. (4)(11)(15)</p> <p style="text-align: center;">...</p> |
| <p>2-14. The Cultural Resources Coordinator should be involved with the master planning and the preparation, updating, and implementation of OMPs (GMP).</p> | <p>Verify that the Cultural Resources Coordinator is involved in the planning process. (11)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>2-15. Corps Districts shall have an HPMP for each operational project (ER 1130-2-438, para 11).</p> <p>...</p> <p>RELIGIOUS/HERITAGE ACCESS</p> <p>2-16. Federal facilities cannot substantially burden a person's exercise of religion (<i>Religious Freedom Restoration Act of 1993</i>, Section 3.)</p> <p>...</p> | <p>Determine if the HPMP has been, or is being, prepared with the following components: (1)(4)(6)(11)(13)(15)</p> <ul style="list-style-type: none"> - overview - initial inventory: <ul style="list-style-type: none"> - identification of documented properties - establishment of historic context - identification of missing data - inventory process to locate missing data: <ul style="list-style-type: none"> - missing data goals - field survey methods - prioritizing investigation topics - protection strategies. <p>...</p> <p>Determine if the facility has on its property a site which is an integral part of a religions ceremony. Examples might include a burial ground or a sacred site. (11)(15)(16)</p> <p>Verify that access to and use of these sites is allowed unless denial of access/use furthers a compelling government interest and is the least restrictive means of furthering a government interest. (11)(15)(16)</p> <p>...</p> |

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| <p>NATIVE AMERICAN GRAVES AND ARTIFACTS</p> <p>2-17. Native American graves and artifacts are protected under Federal law. Corps facilities are required to take measures to identify them, protect them, and cooperate with Native American groups in returning them to their rightful owners (<i>Native American Graves Protection and Repatriation Act of 1990</i> (PL 101-601), Section 3(d), Section 5, and Section 6).</p> | <p>Verify that if Native American human remains, funerary objects, or other cultural items are discovered at the facility, the Secretary of the Army is notified through command channels and the appropriate Indian tribe, Native Hawaiian organization, or Alaskan Native corporation or group is notified. (1)(2)(5)(6)</p> <p>Verify that if the discovery is the result of an activity such as construction, mining, logging, or agriculture, the activity is stopped and a reasonable effort is made to protect the item discovered. (1)(2)(5)(6)</p> <p>(NOTE: The activity may resume 30 days after receipt of certification that notification has been received.)</p> <p>Determine if the facility museum has possession or control over holdings or collections of Native American human remains and associated funerary objects. (1)(2)(5)(6)</p> <p>Verify that if the museum does have possession or control of such remains, inventory of such items is being prepared that: (2)(5)(6)</p> <ul style="list-style-type: none"> - includes information on the geographical origin and cultural information of the items - is completed in consultation with tribal government and Native Hawaiian organization officials and traditional religious leaders - is scheduled for completion no later than 16 November 1995 - is made available for review at all times and stages of completion to the reviewing committee established by the SOI. |

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| 2-17. (continued) | <p>Verify that the facility museum supplies, upon request by an Indian tribe or Native Hawaiian organization, additional available documentation in the form of a summary of existing museum records, including inventories and catalogs, for the limited purpose of determining the geographical origin, cultural affiliation, and basic facts surrounding acquisition and accession of Native American or Native Hawaiian human remains and associated funerary objects. (2)(5)(6)</p> <p>Verify that if a determination of cultural affiliation of any particular Native American human remains or associated funerary objects is made, that the affected Native American group is notified within 6 mo of the completion of the inventory and a copy of the notice is sent to the SOI. Each notice shall contain information that: (2)(5)(6)</p> <ul style="list-style-type: none"> - identifies each Native American human remain or associated funerary object and the circumstances surrounding its acquisition - lists the human remains or associated funerary objects that are clearly identifiable as to tribal origin - lists the Native American human remains and associated funerary objects that are not clearly identifiable as to cultural affiliation but are likely to be affiliated with that Indian tribe or Native Hawaiian organization. <p>Determine if the facility museum has possession or control over unassociated funerary objects, sacred objects, or objects of cultural patrimony. If so, confirm that a written summary of such objects is prepared and contains: (2)(5)(6)</p> <ul style="list-style-type: none"> - a description of the scope of the collection - the kinds of objects included in the collection - reference to geographical origin of the objects - a description of the means and time period of acquisition - the cultural affiliation of the object. <p>Verify that completion of the summary is scheduled for no later than 16 November 1993 and is followed by consultation with tribal officials and traditional religious leaders. (1)(2)(11)</p> |

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| <p>COLLECTION MANAGEMENT AND CURATION</p> <p>2-18. An assessment and evaluation of existing archeological and historic collections owned or controlled by the Corps is required to be done by the USACE Commander (ER 1130-2-433, para 8 and para 12b).</p> <p style="text-align: center;">...</p> <p>2-19. Facilities responsible for the long-term management and preservation of pre-existing collections are subject to certain regulations regarding curation (36 CFR 79.5(a)).</p> <p style="text-align: center;">...</p> | <p>Determine if an assessment and evaluation of archeological and historic collection has been done. (1)(2)(11)</p> <p>Verify that the following procedures were, or are being, initiated: (1)(2)</p> <ul style="list-style-type: none"> - all collections and records generated by Corps undertakings and/or removed from Corps project lands are identified - collection management centers which house collections are identified - a report is generated indicating: <ul style="list-style-type: none"> - the quantity, preservation condition, and cultural affiliation of all material, including human skeletal remains - the condition of all associated records - the degree to which the collection has been prepared, cataloged, treated, accessioned, and stored - the physical state of the collection - a list of all reports and articles generated by the analysis of the collection and its associated records - an estimate for such collection, specifying the funding and time need to attain the required collection standards. <p>Verify that the reports resulting from the completion of the existing collections assessment is submitted to the District Commands (DC) through the Major Subordinate Command (MSC) to the Commander (CDR) USACE ATTN: CECW-P no later than 30 April 1995. (1)(2)(11)</p> <p style="text-align: center;">...</p> <p>Determine if the facility is responsible for the long-term management and preservation of pre-existing archeological collections. (1)(2)(11)</p> <p>Verify that the Historic Preservation Officer identifies repositories holding pre-existing collections placed prior to 12 October 1990 and reviews and evaluates the curatorial services being provided. (1)(2)(11)</p> <p>Verify that if the curatorial services being provided are not adequate, appropriate actions are being taken to eliminate inadequacies. (1)(2)(11)</p> <p style="text-align: center;">...</p> |

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| <p>2-20. Facilities responsible for the long-term management and preservation of new archeological collections are subject to certain regulations regarding curation (36 CFR 79.5(b)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility is responsible for the long-term management and preservation of new archeological collections. (1)(2)(11)</p> <p>Verify that new archeological collections are deposited in a repository only after the following criteria have been met: (1)(2)(11)</p> <ul style="list-style-type: none"> - the repository is capable of providing adequate long-term curatorial services - the repository's facilities, written curatorial policies, and operating procedures are consistent with 36 CFR 79 - the repository has certified, in writing, that the collection will be cared for, maintained and made accessible in accordance with 36 CFR 79 - when the collection is from Indian lands, written consent to the disposition has been obtained from the Indian landowner and the Indian tribe having jurisdiction over the lands - the initial processing of the material remains (including appropriate cleaning, sorting, labeling, cataloging, stabilizing and packaging) has been completed, and associated records have been prepared and organized in accordance with the repository's processing and documentation procedures. <p style="text-align: center;">...</p> |
| <p>2-21. Facilities responsible for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding recordkeeping (36 CFR 79.5(c)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility is responsible for the long-term management and preservation of pre-existing and/or new archeological collections. (1)(2)(11)</p> <p>Verify that the following administrative records on the disposition of each collection include: (1)(2)(11)</p> <ul style="list-style-type: none"> - the name and location of the repository where the collection is deposited - a copy of the contract, memorandum, agreement or other appropriate written instrument, and any subsequent amendments between the facility, the repository, and any other party for curatorial services - a catalog list of the contents of the collection that is deposited in the repository - a list of any other Federal personal property that is furnished to the repository as part of the contract, memorandum, or agreement - copies of reports documenting inspections, inventories, and investigations of loss, damage, or destruction - any subsequent permanent transfer of the collection to another repository. <p style="text-align: center;">...</p> |

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| <p>2-22. Facilities responsible for the long-term management and preservation of pre-existing and new archeological collections are subject to regulations requiring certain long-term curatorial services (36 CFR 79.9(a) and 79.9(b)(1)).</p> | <p>Determine if the facility is responsible for the long-term management and preservation of pre-existing and/or new archeological collections. (1)(2)(11)</p> <p>Verify that the repository provides the following as part of adequate long-term care: (1)(2)(11)</p> <ul style="list-style-type: none"> - accession, labeling, cataloging, storage, maintenance, inventory, and conservation of the particular collection on a long-term basis, using professional museum and archival practices - maintenance of complete and accurate records of the collection, including: <ul style="list-style-type: none"> - records on acquisition - catalogs and artifact inventory lists - descriptive information, including field notes, site forms, and reports - photographs, negative, and slides - locational information, including maps - approved loans and other uses - inventory and inspection records, including any environmental monitoring records - records on lost, deteriorated, damaged, or destroyed U.S. Government property. |

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| <p>2-23. Collection management centers are required to meet specific standards (ER 1130-2-433, para 10).</p> | <p>Verify that procedures are in place to access, label, catalog, store, maintain, inventory, and conserve collections using professional archival practices. (1)(2)(11)</p> <p>Verify that complete and accurate records of the collection are maintained, including the following: (1)(2)(11)</p> <ul style="list-style-type: none"> - records on acquisitions - catalog and artifact inventory lists - descriptive information, including field notes, site forms, and reports - photographs, negatives, slides, video tapes, audio tapes, computer tapes, disks, and diskettes - locational information, including maps - information on the condition of the collection - approved loans and other uses - inventory and inspection records, including any environmental monitoring records - records on lost, deteriorated and subsequent transfers, repatriations, or discards. <p>Verify that the staff and any consultants who are responsible for managing and preserving the collection are qualified collections professionals. (1)(2)(11)</p> |
| <p>2-24. Facilities responsible for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding repository security (36 CFR 79.9(b)(2), 79.9(b)(3), and 79.9(b)(6)).</p> | <p>Determine if the facility is responsible for the long-term management and preservation of pre-existing and/or new archeological collections. (1)(2)(11)</p> <p>Verify that the repository has dedicated equipment and space to properly store, study, and conserve the collection. (1)(2)(11)</p> <p>Verify that the collection is under physically secure conditions within storage, laboratory, study, and any exhibition areas, and that the physical plant meets the following criteria: (1)(2)(11)</p> <ul style="list-style-type: none"> - local electrical, fire, building, health, and safety codes are met - appropriate and operational fire detection and suppression system exists - appropriate and operational intrusion detection and deterrent system exists - adequate emergency management plan exists, establishing procedures for responding to fires, floods, natural disasters, civil unrest, acts of violence, structural failures, and failures of mechanical systems within the physical plant - additional security is provided for fragile or valuable items, and access to the keys, collection, and physical plant is limited and controlled - inspections of the physical plant for possible security weaknesses and environmental control problems are carried out and inadequacies corrected. |

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| <p>2-24. (continued)</p> <p>...</p> <p>2-25. Facilities responsible for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding curatorial staff qualifications (36 CFR 79.9 (b)(4)).</p> <p>...</p> <p>2-26. Facilities responsible for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding curatorial procedures (36 CFR 79.9(b)(5)).</p> <p>...</p> <p>2-27. Facilities responsible for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding the use of the collections (36 CFR 79.10).</p> <p>...</p> | <p>Verify that storage of site forms, field notes, artifacts inventory lists, computer disks and tapes, catalog forms, and a copy of the final report is done in manner that protects them from theft and fire by: (1)(2)(11)</p> <ul style="list-style-type: none"> - storing a duplicate set of records in a separate location, or - ensuring that records are maintained and accessible through another party. <p>...</p> <p>Determine if the facility is responsible for the long-term management and preservation of pre-existing and/or new archeological collections. (1)(2)(11)</p> <p>Verify that the staff and consultants who are responsible for managing and preserving the collection are qualified museum professionals. (1)(2)(11)</p> <p>...</p> <p>Determine if the facility is responsible for the long-term management and preservation of pre-existing and/or new archeological collections. (1)(2)(11)</p> <p>Verify that handling, storage, cleaning, conservation, and exhibition of the collection is performed in a manner that: (1)(2)(11)</p> <ul style="list-style-type: none"> - is appropriate to the nature of the material remains and associated records - protects the collections from breakage and possible deterioration from adverse temperature, relative humidity, visible light, ultra-violet radiation, dust, soot, gases, mold, fungus, insects, rodents, and general neglect - preserves data that may be studied in future laboratory analyses. <p>...</p> <p>Determine if the facility is responsible for the long-term management and preservation of pre-existing and/or new archeological collections. (1)(2)(11)</p> <p>Verify that the collection is available for scientific, educational and religious uses, subject to such terms and conditions as are necessary to protect and preserve the condition, research potential, religious or sacred importance, and uniqueness of the collection. (1)(2)(11)</p> <p>...</p> |

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| <p>2-28. Facilities responsible for the long-term management and preservation of pre-existing and new archeological collections are subject to certain regulations regarding the conduct of inspections and inventories of those collections (36 CFR 79.9(b)(7), 79.9(b)(8), and 79.11(b) through 79.11(d)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has responsibilities for the long-term management and preservation of pre-existing and/or new archeological collections. (1)(2)(11)</p> <p>Verify that inspections and inventories of the collection are conducted periodically. (1)(2)(11)</p> <p>Verify that inspection of the collection for possible deterioration and damage is conducted. (1)(2)(11)</p> <p>Verify that the inventories include the material remains and associated records and any other U.S. Government-owned personal property in the possession of the repository. (1)(2)(11)</p> <p>Verify that qualified museum professionals conduct the inspections and inventories. (1)(2)(11)</p> <p>Verify that following each inspection and inventory, the personnel responsible for the inspection and inventory prepare and provide the Historical Preservation Officer with a written report of the results, including the status of the collection, treatments completed, and recommendations for additional treatments. (1)(2)(11)</p> <p>(NOTE: For collections from Indian lands, the Indian landowner, Tribal Official, and Indian tribe who have jurisdiction over the lands are also provided with a copy of the notification.)</p> <p>Verify that within 5 days of the discovery of any loss or theft of, deterioration and damage to, or destruction of the collection (or a part thereof), or any other U.S. Government-owned property, the personnel responsible for the curation of the collection prepare and provide the Historic Preservation Officer with written notification of the circumstances surrounding the loss. (1)(2)(11)</p> <p>Verify that the collection is available for inspection by the Historic Preservation Officer, the Indian landowner and Tribal Official (when the collection is from Indian lands), the Indian tribal elder, religious leaders, and other officials representing the Indian tribe or other group for whom the remains have religious or sacred importance. (1)(2)(11)</p> <p style="text-align: center;">...</p> |
| <p>2-29. Collection management centers are required to write an annual report updating the status of respective collections (ER 1130-2-433, para 12a).</p> <p style="text-align: center;">...</p> | <p>Verify that an annual report is generated that includes: (1)(2)(11)</p> <ul style="list-style-type: none"> - any changes made to the collection management center - any changes of, additions to, or alterations of the material remains or associated records (including loans) - problem areas - names and purposes of individuals or organizations having access to the collections in the previous year - citations of any reports, manuscripts, theses, or dissertations resulting from use of the collection. <p style="text-align: center;">...</p> |

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Section 3

Hazardous Materials Management

SECTION 3

HAZARDOUS MATERIALS MANAGEMENT

A. Applicability

This section primarily addresses the proper storage and handling of chemicals and the spill contingency and response requirements related to hazardous materials. Oil, pesticides, and asbestos are hazardous materials that require special management practices at Corps facilities, and are addressed in separate sections. Radioactive substances and the general category of hazardous wastes are also not included in this section. This section does not focus on individual hazardous chemicals or substances used, but deals with the generic requirements and good management practices (GMPs) associated with minimizing impacts on the environment from spills or releases of hazardous materials because of improper storage and handling.

All underground storage tank (UST) regulations that apply to hazardous materials have been consolidated into Section 10, *Underground Storage Tank (UST) Management*.

B. Federal Legislation

- *The Hazardous Materials Transportation Act*. This Act, administered by the U.S. Department of Transportation (DOT), regulates the shipping, marking, labeling, placarding, and recordkeeping requirements for hazardous materials listed in 49 Code of Federal Regulations (CFR) 172.101. Since most Corps facilities are not shippers of hazardous materials, but rather use commercial transportation firms for this purpose, the requirements of these DOT regulations may not be applicable. However, those facilities that do ship hazardous materials are responsible for complying with the DOT regulations.
- *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980*. This Act was amended by the *Superfund Amendments and Reauthorization Act (SARA)* of 1986, 42 U.S. Code (USC) 9601-11050, 10 USC 2701-2810 et. al. *CERCLA/SARA* regulates the prevention, control, and compensation relating to environmental pollution.
- The U.S. Environmental Protection Agency (USEPA) also regulates some special hazardous materials under the *Toxic Substances Control Act (TSCA)*, particularly polychlorinated biphenyls (PCBs) (40 CFR 761) and asbestos (40 CFR 763). However, these are covered in a separate section (Section 9, *Special Pollutants Management*) and will not be discussed here.

- *The Occupational Safety and Health Act (OSHA)*. The general purpose of this Act is to assure, as much as possible, safe and healthful working conditions for every individual working in the United States.
- *The Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA)*. This Act was designed to promote emergency planning and preparedness at both the state and local level. It provides citizens and local governments with information regarding the potential hazards in their community. *EPCRA* requires the use of emergency planning and designates state and local governments as recipients for information regarding chemicals and toxins used in the community.
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO, published 13 October 1978, requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for ensuring that the facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements and for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.
- EO 12856, *Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements*. This EO requires the heads of Federal agencies to develop a written pollution prevention strategy for their agencies. Military departments are covered under the auspices of the Department of Defense (DOD). The head of each agency shall ensure that each of its covered facilities develops a written pollution prevention plan no later than the end of 1995. Federal agencies are required to conduct assessments of their facilities as necessary to ensure development of these plans and of the facilities' pollution prevention programs. Each Federal agency will also develop voluntary goals to reduce its total releases of toxic chemicals to the environment, and offsite transfers of such chemicals for treatment and disposal are publicly reported. Under this EO Federal facilities are required to comply with *EPCRA*.
- The National Fire Code, the *Flammable and Combustible Liquids Code*, National Fire Protection Association (NFPA) 30, prohibits the storage of Class I and Class II liquids (see *Key Compliance Definitions*) in plastic containers in general purpose warehousing.

C. State/ Local Regulations

Hazardous materials may be regulated on the state level as well as by local agencies (county/city fire departments) that require flammable/combustible materials to meet certain storage requirements. Usually, these local ordinances will follow the NFPA *Fire Protection Guide on Hazardous Materials* (Pamphlets 325A, 325M, 49, 491F, and 704M).

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- DODR 4145.19-1, *Storage and Materials Handling*. This regulation details storage procedures for hazardous materials, including compressed gases, acids, and flammable/combustible liquids.
- Engineering Manual (EM) 385-1-1, *Safety and Health Requirements*. Although this is a manual and not an ER, the contents are applicable to all missions under the command of the Chief of Engineers, whether accomplished by military, civilian, or contractor forces. In relation to hazardous materials, it regulates storage and handling practices.
- ER 1130-2-434, *Response to Oil and Hazardous Incidents*. This regulation provides guidelines for oil and hazardous substance contingency plans.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- Planning and Documentation - Facility and district offices should maintain a master listing of hazardous materials storage sites, and the Safety Officer should inspect these sites. The facility should have a written Oil and Hazardous Substances Pollution Contingency (OHSPC) Plan for spill events. When the facility needs outside fire protection help, it is required to tell the local fire department what types of hazardous chemicals it uses, the areas where it uses them, what it uses them for, and the amount it uses. The facility is required to have Material Safety Data Sheet (MSDS) files for each hazardous chemical it stores and uses, not including such items as hazardous waste, tobacco, or drugs and cosmetics meant for personal use (ER 1130-2-434, para 7c(1); EM 385-1-1, para 06.B.01, para 09.A.16; 40 CFR 300.105(a); 29 CFR 1910.1200(b) and 1910.1200(g)).

- **Personnel Training** - Facilities are required to provide all employees with written information about hazardous chemicals to which they are exposed. Personnel who work with hazardous materials are required to be trained in the use and potential hazards of such materials. All employees and supervisors working on sites exposed to hazardous materials or other hazards must be trained before engaging in these activities (29 CFR 1910.1200).
- **Hazardous Substance Release Reporting** - U.S. Army Corps of Engineers (USACE) facilities are required to notify the National Response Center (NRC) immediately if they release hazardous substances in excess of or equal to reportable quantities. Facilities with continuous and stable releases have limited notification requirements. If a facility produces, uses, or stores extremely hazardous chemicals, and has a reportable release of these substances, it must notify the community emergency coordinator or local planning committee, or Governor if there is no planning committee (40 CFR 302.1 through 302.6, 302.8, and 355.40).
- **Emergency Planning** - A facility with extremely hazardous substances in amounts equal to or greater than the limits found in Appendix 3-1 are required to notify the emergency response commission and designate a representative to participate in local emergency planning (40 CFR 355.10 through 355.30 and 355 Appendix A).
- **Right-to-Know Requirements** - Facilities required by OSHA to have an MSDS for a hazardous chemical are required to submit MSDSs to the emergency commission and fire department with jurisdiction over the facility. MSDSs will be updated within 3 mo after discovery of significant new information (40 CFR 370.20 through 370.28).
- **Hazardous Materials Storage** - Containers for hazardous chemicals are required to be labeled or tagged with the identity of the substance and appropriate warning markings. Areas where hazardous materials are stored or used around the facility are required to be kept free from accumulations of materials that create a hazard, such as leaking containers or the placement of containers in a manner that would create hazards such as tripping, fire, and pests. Substances that together can create a fire hazard must be separated. A qualified person is required to supervise use of poisons, acids, caustics, and toxic chemicals. Disposal procedures for surplus materials must prevent contamination of water supplies (29 CFR 1910.176(c), 1910.1200(b) and 1200(f); EM 385-1-1, para 09.E.08 and para 06.B.03).
- **Hazardous Materials in Laboratories** - Facilities that use hazardous chemicals in laboratories are required to have a Chemical Hygiene Plan which is reviewed annually. Such facilities must provide employees with information and training

about the hazardous chemicals in their work areas. Records about the exposure of employees are to be kept along with medical records (29 CFR 1910.1450(e), 1910.1450(f), 1910.1450(h), and 1910.1450(j)).

- **Storage of Flammable/Combustibles** - All tanks, containers, and pumping equipment, portable or stationary, used for the storage and handling of flammable and combustible liquids, are required to be listed by a nationally recognized laboratory for use in hazardous areas. Flammable and combustible liquids in quantities greater than those required for one day's use will not be stored in buildings under construction, and not more than two day's supply of such liquids will be stored on paint barges. Dispensing systems for flammable or combustible liquids are to be electrically bonded and grounded. Hoses, containers, and tanks of 5 gal [18.93 L] or less are to be kept in metallic contact during the transfer of flammable liquids. In general, containers of flammable/combustible liquids are to be stored and handled so as to not damage the container or label, block exits, or create a fire hazard (EM 385-1-1, para 09.B.10, 09.B.25; 29 CFR 1910.106(d)).
- **Flammable/Combustible Storage Cabinets** - No more than 25 gal [94.64 L] of flammable or combustible liquid can be stored in a room outside of an approved metal storage cabinet unless it is an approved flammable material storage room. Storage cabinets are to be fire resistant and labeled FLAMMABLE - KEEP FIRE AWAY. No more than 60 gal [227.12 L] of Class I or Class II liquids and no more than 120 gal [454.23 L] of Class III liquids can be stored in a cabinet (EM 385-1-1, para 09.B.16(a); 29 CFR 1910.106(d)(3)).
- **Flammable Combustible Storage Rooms** - Storage rooms inside a building are to be fire resistant and have a raised sill or ramp to prevent the flow of spilled material from exiting the room. Ventilation and clear aisles must be provided, and dispensing must be done by an approved pump or self-closing faucet (29 CFR 1910.106(d)(4)).
- **Flammable/Combustible Warehouses or Storage Buildings** - These structures will have 3 ft [0.91 m] wide aisles for access to doors, windows, or standpipe connections. Materials will be stacked using pallets or dunnage when needed for stabilization, and fire protection must be provided (29 CFR 1910.106(d)(5)(iv)).
- **Outside Storage of Flammable Combustible Liquids** - Containers of flammable/combustible liquids can be stored outside if no more than 1100 gal [4163.95 L] of liquid are stored adjacent to a building. More than 1100 gal [4163.95 L] can be stored if there are 10 ft [3.05 m] or more between buildings and the nearest flammable container. The storage area must either be graded to divert spill or surrounded by a curb (29 CFR 1910.106(d)(6)).

- **Storage of Flammable/Combustibles in Industrial Areas** - Specific guidelines, requirements, or operating standards apply wherever flammable/combustible materials are stored, dispensed, or used in industrial plants, are in incidental storage, or are used in unit operations. This includes availability of portable fire extinguishers, the practice of precautions to prevent ignition, and the use of maintenance and operating practices to control leakage and prevent accidental escape of flammable/combustible liquids (29 CFR 1910.106(e)(2) through 1910.106(e)(9)).
- **Flammable/Combustible Liquid Storage Tanks** - Storage tanks that hold flammable/combustible liquids must not be below ground or inside buildings. They are to be built of steel except in specific circumstances. Outside aboveground tanks for flammable liquids are to meet requirements for distance between tanks, firefighting access, and containment. When flammable vapor from storage tanks might be present, heat sources will be kept from the tanks. Tanks are required to have been strength-tested before use (29 CFR 1910.106(b)).
- **Compressed Gases** - When compressed gases are stored in roofed, open-sided sheds, the sheds are to be located on concrete slabs and in secured areas. When gases are stored in an enclosed storage facility, the building is to be no more than one story high with separate storage compartments available. Regardless of where the cylinders are stored, NO SMOKING signs will be posted and actions taken to prevent fire (29 CFR 1910.101; DODR 4145.19-1, para 5-405d(2), 5-405c; EM 385-1-1, para 20.D.03, para 20.D.08, para 20.D.05 through para 20.D.10, and para 20.D.15).
- **Acid Storage** - Bulk storage of acids must be done in buildings that are one story high and ventilated. Safety equipment and fire protection must be available. The building must be labeled NO SMOKING and heated to prevent freezing (DODR 4145.19-1, para, 5-406).
- **Hazardous Materials Transportation** - The regulations in Title 49, Subchapter C of the CFR details requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply when materials are being transported in *commerce*. According to a representative from the DOT, *commerce* is defined, in this instance, in terms of making a profit; therefore, Subchapter C does not apply to Federal agencies.

F. Key Compliance Definitions

These definitions were obtained from the regulations previously cited in this section.

- *Aerosol* - a material dispensed from its container as a mist, spray, or foam by a propellant under pressure (29 CFR 1910.106(a)(1)).
- *Approved* - listed or approved by Underwriter's Laboratories, Inc., Factory Mutual Engineering Corporation, The Bureau of Mines, National Institute of Occupational Safety and Health (NIOSH), the American National Standards Institute (ANSI), the NFPA, or other nationally recognized agencies that list, approve, test, or develop specifications for equipment to meet fire protection, health, or safety requirements (29 CFR 1910.106(a)(35)).
- *Atmospheric Tank* - a storage tank designed to operate at pressures from atmospheric through 0.5 psig (29 CFR 1910.106(a)(2)).
- *Automotive Service Station* - that portion of property where flammable or combustible liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles; it shall include any facilities available for the sale and service of tires, batteries, and accessories, and for minor automotive maintenance work. Major automotive repairs, painting, and body and fender work are excluded (29 CFR 1910.106(a)(3)).
- *Barrel* - a volume of 42 gal [0.16 m³] (29 CFR 1910.106(a)(33)).
- *Basement* - a story of a building or structure having one-half or more of its height below ground level and to which access for firefighting purposes is unduly restricted (29 CFR 1910.106(a)(4)).
- *Boiling Point* - the temperature at which a liquid starts to boil at atmospheric pressure (14.7 psia [760 mm]), as determined by the American Society for Testing Materials (ASTM) Test D-86-72) (29 CFR 1910.106(a)(5)).
- *Bulk Plant* - that portion of the property where flammable or combustible liquids are received by tank vessels, pipelines, tank cars, or tank vehicles, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel pipeline, car, tank vehicle, or container (29 CFR 1910.106(a)(7)).
- *Closed Container* - a container sealed with a lid or other closing device so that neither liquid and/or vapor will escape from it at ordinary temperatures (29 CFR 1910.106(a)(9)).

- **Combustible Liquid** - a liquid having a flashpoint at or above 100 °F (37.8 °C). Combustible liquids are categorized as Class II or Class III liquids and are further subdivided as follows (29 CFR 1910.106(a)(18)):
 1. Class II are liquids with a flashpoint at or above 100 °F (37.8 °C) and below 140 °F (60 °C), except for any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the total volume of which makes up 99 percent or more of the total volume of the mixture
 2. Class III A are liquids with a flashpoint at or above 140 °F (60 °C) and below 200 °F (93.3 °C), except for any mixture having components with flashpoints of 200 °F (93.3 °C) or higher, the total volume of which makes up 99 percent or more of the total volume of the mixture
 3. Class III B are liquids with a flashpoint at or above 200 °F (93.3 °C).
- **Extremely Hazardous Substances** - all substances listed in Appendices A and B in 40 CFR 355 (see the column labeled Extremely Hazardous Substances in Appendix 3-1) (40 CFR 355.20).
- **Fire Area** - that portion of a building separated from the remainder by construction having a rated fire resistance of at least 1 h and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 2 h (29 CFR 1910.106(a)(12)).
- **Flammable Aerosol** - an aerosol that is required to be labeled FLAMMABLE under the *Federal Hazardous Substance Labeling Act* (15 USC 1261). These aerosols are considered Class IA liquids (29 CFR 1910.106(a)(19)).
- **Flammable Liquid** - a liquid with a flashpoint below 100 °F (37.8 °C), except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which makes up 99 percent or more of the total volume of the mixture. Flammable liquids are categorized as Class I liquids and are further subdivided as follows (29 CFR 1910.106(a)(19)):
 1. Class I A are liquids with a flashpoint below 73 °F (22.8 °C) and boiling point below 100 °F (37.8 °C)
 2. Class I B are liquids with a flashpoint below 73 °F (22.8 °C) and boiling point at or above 100 °F (37.8 °C)
 3. Class I C are liquids with a flashpoint at or above 73 °F (22.8 °C) and below 100 °F (37.8 °C).
- **Flashpoint** - the minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. Flashpoints are established using several standard closed cup test methods (29 CFR 1910.106(a)(14)).
- **Good Management Practice (GMP)** - practices that, although not mandated by law, are encouraged to promote safe operating procedures.

- *Hazardous Chemical* - in relationship to laboratories, a chemical for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles, that acute or chronic health effects may occur in exposed employees (29 CFR 1910.1450(b)).
- *Hazardous Substance* - any substance designated pursuant to 40 CFR 302 (see the column titled Hazardous Substance RQ in Appendix 3-1) (40 CFR 302.3).
- *Institutional Occupancy* - the occupancy or use of a building or structure, or any portion thereof, by persons harbored or detained to receive medical, charitable, other care or treatment, or by persons involuntarily detained (29 CFR 1910.106(a)(16)).
- *Laboratory* - a facility where the laboratory use of hazardous chemicals occurs. It is a workplace where relatively small quantities of hazardous chemicals are used on a nonproduction basis (29 CFR 1910.1450(b)).
- *Laboratory Scale* - work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person (29 CFR 1910.1450(b)).
- *Laboratory Use of a Hazardous Chemical* - handling or use of such chemicals in which all of the following conditions are met (29 CFR 1910.1450(b)):
 1. chemical manipulations are carried out on a laboratory scale
 2. multiple chemical procedures or chemicals are used
 3. the procedures involved are not part of a production process, nor in any way simulate a production process
 4. protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.
- *Liquid* - any material with a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test D-5-73. When not otherwise identified, the term *liquid* will include both flammable and combustible liquid (29 CFR 1910.106(a)(17)).
- *Low Pressure Tank* - a storage tank designed to operate at pressures above 0.5 psig but not more than 15 psig (29 CFR 1910.106(a)(21)).
- *Material Safety Data Sheet (MSDS)* - written or printed material which contains information on hazardous chemicals such as common name, physical hazards, and health hazards (29 CFR 1200(c)).

- *Office Occupancy* - the occupancy or use of a building or structure, or any portion thereof, for the transaction of business or the rendering or receiving of professional services (29 CFR 1910.106(a)(24)).
- *Portable Tank* - a closed container with a liquid capacity over 60 gal [227.12 L] and not intended for fixed installation (29 CFR 1910.106(a)(25)).
- *Pressure Vessel* - a storage tank or container designed to operate at pressures above 15 psig (29 CFR 1910.106(a)(29)).
- *Protection for Exposure* - adequate fire protection for structures on property adjacent to tanks where employees of the establishment are located (29 CFR 1910.106(a)(27)).
- *Safety Can* - an approved flammable liquid container with a spring-closing lid, spout cover, and other features designed to safely relieve internal pressure and provide safe storage for the liquid (29 CFR 1910.106(a)(29)).
- *Select Carcinogen* - any substance that meets one of the following criteria (29 CFR 1910.1450(b)):
 1. regulated by *OSHA* as a carcinogen
 2. listed under the category "known to be carcinogens" and in the *Annual Report on Carcinogens* published by the National Toxicology Program (NTP)
 3. listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
 4. listed in either Group 2A or 2B by IARC or under the category "reasonably anticipated to be carcinogens" by the NTP, and causes statistically significant tumor incidences in experimental animals under specific situations.
- *Toxic Chemical* - a chemical or chemical category listed in 40 CFR 372.65 (see the column titled Toxic Chemicals in Appendix 3-1) (40 CFR 372.3).
- *Vapor Pressure* - the pressure, measured in pounds per square inch absolute (psia) exerted by a volatile liquid (29 CFR 1910.106(a)(30)).

HAZARDOUS MATERIALS MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PEOPLE OR GROUPS:(a) |
|--|---------------------------------|---------------------------------------|
| All Facilities | 3-1 through 3-8 | (5)(6)(8)(10)(15)(16)(17) |
| Personnel Training | 3-9 and 3-10 | (5) |
| Hazardous Materials Releases | 3-11 through 3-13 | (5)(6) |
| Emergency Planning | 3-14 | (5)(6) |
| Right-to-Know | 3-15 and 3-16 | (5)(6) |
| Hazardous Materials Storage | 3-17 through 3-22 | (5)(6)(8)(10)(15)(16)(17) |
| Hazardous Materials in Laboratories | 3-23 through 3-26 | (5)(8) |
| Flammables/Combustibles Storage | | |
| General | 3-27 through 3-41 | (5)(6)(10)(15)(16)(17) |
| Industrial Areas | 3-42 through 3-44 | (5)(6) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (see descriptions in POC section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

HAZARDOUS MATERIALS MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

(continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PEOPLE OR GROUPS:(a) |
|--|---------------------------------|---------------------------------------|
| Flammables/Combustibles Storage Tanks | 3-45 through 3-49 | (5)(6) |
| Compressed Gases | 3-50 through 3-53 | (5)(6)(8)(10) |
| Acid Storage | 3-54 | (15)(16)(17) |
| Transportation | 3-55 | (10)(15)(16)(17) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (see descriptions in POC section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

HAZARDOUS MATERIALS MANAGEMENT

Records to Review

- Hazardous Substance Spill Control and Contingency Plan
- Spill records
- Emergency plan documents
- MSDSs
- Inventory records
- Hazardous substance release reports
- Shipping papers
- Training records
- Placarding of hazardous materials

Physical Features to Inspect

- Hazardous material storage areas
- Shop activities
- Shipping and receiving area
- Hatcheries

People to Interview

- Environmental Compliance Coordinator (ECC)
- Natural Resources Manager
- Safety and Occupational Health Office
- Operations
- Project Resource Manager
- Facility Managers
- Lab Manager

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. The chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 3-1 through 3-8 | 3-1 through 3-8 |
| 3-9 | 3-17 |
| 3-10 through 3-17 | 3-9 through 3-16 |
| 3-18 and 3-19 | 3-18 and 3-19 |
| 3-20 and 3-21 | deleted 3-20 |
| 3-22 through 3-28 | 3-21 through 3-27 3-28 through 3-30 |
| 3-29 through 3-31 | 3-31 through 3-33 |
| no match | 3-34 |
| 3-32 | 3-35 |
| 3-33 | deleted |
| 3-34 | 3-36 |
| no match | 3-37 |
| 3-35 and 3-36 | 3-38 and 3-39 |
| 3-37 | deleted |
| 3-38 through 3-42 | 3-40 through 3-44 |
| 3-43 | deleted |
| 3-44 through 3-53 | 3-45 through 3-54 |
| 3-54 through 3-57 | 3-55 |

| | | | |
|-------------------------|--|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: HAZARDOUS MATERIALS MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>ALL FACILITIES</p> <p>3-1. Determine actions or changes since previous review of hazardous materials management (GMP). ...</p> <p>3-2. All relevant regulations, directives, and guidance documents on hazardous materials should be maintained at either the facility or the district or division office (GMP). ...</p> <p>3-3. Facilities are required to comply with state and local regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3). ...</p> | <p>Determine if noncompliance issues have been resolved by examining a copy of the previous review report. (5) ...</p> <p>Verify that the following documents are maintained and kept current at the facility or the district or division office: (5)(6)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance With Pollution Control Standards</i>. - 29 CFR 1910, <i>Occupational Safety and Health Standards</i>. - 40 CFR 300, <i>National Oil and Hazardous Substances Pollution Contingency Plan</i>. - 40 CFR 302, <i>Reportable Quantities of Hazardous Materials (Table 302.4)</i>. - 40 CFR 355, <i>Emergency Planning and Notification</i>. - 40 CFR 370, <i>Hazardous Chemical Reporting: Community Right-to-Know</i>. - 49 CFR 171, <i>General Information, Regulations, and Definitions</i>. - 49 CFR 172, <i>Hazardous Materials Table, Special Provisions, Hazardous Materials Communications Requirements and Emergency Response Information Requirements</i>. - DODR 4145.19-1, <i>Storage and Materials Handling</i>, September 1979. - NFPA, <i>Fire Protection Guide of Hazardous Materials</i>. - EM 385-1-1, <i>Safety and Health Requirements Manual</i>, October 1992. - ER 1130-2-434, <i>Response to Oil and Hazardous Substance Incidents</i>, 1 July 1985. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - Applicable state and local regulations. <p>...</p> <p>Verify that the facility is complying with state and local requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)(6)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - transportation of hazardous materials - notification requirements - response plan requirements - monitoring of low level radiation - spill response requirements.) <p>...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (8) Safety and Occupational Health Office (10) Operations (14) Emergency Management **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>3-4. A master listing of all hazardous materials storage sites should be maintained at the facility and at the district office (GMP).</p> <p style="text-align: center;">...</p> | <p>Determine, through interviews, the locations of all hazardous materials storage areas on the facility. (5)(6)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>3-5. Hazardous materials storage sites should be inspected by the Safety Officer (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify, by reviewing inspection forms, that the Safety Officer is inspecting the sites. (8)</p> <p style="text-align: center;">...</p> |
| <p>3-6. Facilities must have a written OHSPC Plan for spill events (40 CFR 300.105(a) and ER 1130-2-434, para 7c(1)).</p> <p style="text-align: center;">...</p> | <p>(NOTE: This same plan is necessary for review of oil-related operations in Section 7, <i>Petroleum, Oil, and Lubricant (POL) Management</i>.)</p> <p>Verify that the OHSPC Plan implements the following: (5)(6)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - includes all hazardous substances storage areas - designates one individual or department to initiate spill response - is written, reviewed, and made available to other offices on the facility - is rehearsed through periodic drills and demonstrations - specifies and makes readily available the materials and equipment needed to manage a spill, including: <ul style="list-style-type: none"> - respiratory protection - absorbents - ear/eye protection - spill kits - protective clothing - neutralizers - makes response materials and protective clothing readily available - specifies emergency medical procedures and first aid materials - lists hazard control materials, including: <ul style="list-style-type: none"> - hazard signs and labels - rope, wire, and tape - monitors and survey meters - specifies phone numbers of Federal, state, and local agencies that must be notified when a spill occurs - includes phone numbers and contacts for agencies that provide emergency advice and assistance, such as the CHEMTREC database - specifies personnel decontamination procedures that must be followed after cleanup of a spill. <p>Verify that appropriate personnel acknowledge the requirements contained in the OHSPC Plan. (5)(6)</p> <p style="text-align: center;">...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (8) Safety and Occupational Health Office (10) Operations (14) Emergency Management **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>3-7. When outside help is needed for fire protection, facilities will make a written agreement or memorandum of agreement with the local fire department stating the terms of the arrangement and details concerning the types of hazardous substances used at the facility, the areas where they are used, what they are used for, and the quantities used in a given operation (EM 385-1-1, para 09.A.16).</p> <p style="text-align: center;">...</p> | <p>Determine if outside help is needed for fire protection. (15)(16)(17)</p> <p>Verify that a written agreement exists. (15)(16)(17)</p> <p>Verify that the fire department is aware of the types and locations of hazardous materials used at the facility. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (8) Safety and Occupational Health Office (10) Operations (14) Emergency Management **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>3-8. Facilities are required to have on file an MSDS for each hazardous chemical stored and used at the facility (29 CFR 1910.1200(b)(3)(ii), 1910.1200(b)(4)(ii), 1910.1200(b)(6), 1910.1200(g)(1), 1910.1200(g)(8); and EM 385-1-1, para 06.B.01).</p> <p style="text-align: center;">...</p> | <p>Verify that an MSDS is on file for each hazardous material stored or used and that it is readily accessible to workers on all shifts in the workplace. (15)(16)(17)</p> <p>Verify that, before a hazardous substance is brought onto a job site, all employees involved are advised of MSDS information. (15)(16)(17)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - hazardous waste - tobacco or tobacco products - wood or wood products - articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> - is formed to a specific shape or design during manufacture - has end use functions dependent in whole or in part upon its shape or design during end use - food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel - any drug, as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration - cosmetics which are packaged for sale or intended for personnel use - any consumer product or hazardous substance, as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i>, that the facility uses in the workplace in the same manner as normal consumer use, and whose use results in a duration and frequency of exposure no greater than that experienced by consumers - ionizing and nonionizing radiation - biological hazards.) <p>(NOTE: This requirement also applies to laboratories and to work operations during which employees only handle chemicals in sealed containers that are not opened under normal conditions of use.)</p> <p style="text-align: center;">...</p> |

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| <p>PERSONNEL TRAINING</p> <p>3-9. Facilities are required to have a written hazardous communications program that is designed to provide all employees with information about the hazardous chemicals to which they are exposed (29 CFR 1910.1200(b)(1), 1910.1200(b)(6), 1910.1200(c), and 1910.1200(e)(1)).</p> | <p>Verify that there is a written hazard communication program that contains the following: (5)</p> <ul style="list-style-type: none"> - how general training will be done to inform employees of issues such as MSDSs and hazardous materials labels and other warning signs - a list of the hazardous chemicals known to be present (can be compiled for the entire workplace or for individual work areas) - the methods the facility will use to inform its employees of the hazards associated with nonroutine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas. <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - hazardous waste - tobacco or tobacco products - wood or wood products - articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> - is formed to a specific shape or design during manufacture - has end use functions dependent in whole or in part upon its shape or design during end use - food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel - any drug, as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration - cosmetics which are packaged for sale or intended for personnel use - any consumer product or hazardous substance, as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i>, that the facility uses in the workplace in the same manner as normal consumer use, and whose use results in a duration and frequency of exposure no greater than that experienced by consumers - ionizing and nonionizing radiation - biological hazards.) <p>(NOTE: This requirement also applies to laboratories and to work operations during which employees only handle chemicals in sealed containers that are not opened under normal conditions of use.)</p> |

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| <p>3-10. Personnel working with hazardous materials are required to be trained in the proper use and potential hazards of such materials (29 CFR 1910.1200(b)(3)(iii), 1910.1200(b)(4)(iii), 1910.1200(b)(6), and 1910.1200(h)).</p> | <p>Verify that employees are provided with information about and trained for the use of hazardous chemicals in their workplace at the time of initial assignment and whenever a new hazard is introduced to the workplace. (5)</p> <p>Verify that employees are informed of the following: (5)</p> <ul style="list-style-type: none"> - any operations in their work areas where hazardous chemicals are present - the location and availability of the written hazard communication program, including the required lists of hazardous chemicals and the MSDSs. <p>Verify that training includes: (5)</p> <ul style="list-style-type: none"> - methods and observations to use to detect a release - the physical and health hazards of the chemicals in the work areas - protective measures and procedures to use - the details of the hazard communication program developed by the facility, including an explanation of the labeling system, MSDSs, and how to obtain and use hazard information. <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - hazardous waste - tobacco or tobacco products - wood or wood products - articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> - is formed to a specific shape or design during manufacture - has end use functions dependent in whole or in part upon its shape or design during end use. - food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel - any drug, as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration - cosmetics which are packaged for sale or intended for personnel use - any consumer product or hazardous substance, as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i>, that the facility uses in the workplace in the same manner as normal consumer use, and whose use results in a duration and frequency of exposure no greater than that experienced by consumers - ionizing and nonionizing radiation - biological hazards.) <p>(NOTE: These requirements also apply to laboratories, for protection in the event of a spill or leak, and to work operations during which employees only handle chemicals in sealed containers that are not opened under normal conditions of use.)</p> |

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| <p>HAZARDOUS MATERIALS RELEASES</p> <p>3-11. Releases in excess of or equal to reportable quantities of hazardous substances shall be reported immediately to the NRC (40 CFR 302.1 through 302.6).</p> <p>...</p> <p>3-12. Facilities with releases that are continuous and stable in quantity and rate are required to meet limited notification requirements (40 CFR 302.8).</p> <p>...</p> | <p>Verify that spills in excess of the reportable quantities listed in Appendix 3-1 have been reported. (5)</p> <p>Verify that a procedure is in place to notify the NRC immediately after becoming aware of the release. (5)</p> <p>Verify that if mixtures or solutions of hazardous substances, except for radionuclides, are released, it is reported when either of the following happens: (5)</p> <ul style="list-style-type: none"> - the quantity of all hazardous constituents of the mixture or solution is known and a reportable quantity or more of any hazardous constituent is released - the quantity of one or more of the hazardous constituents of the mixture or solution is unknown but the total amount of the mixture or solution released exceeds the reportable quantity for the hazardous constituent with the lowest reportable quantity. <p>(NOTE: Notification requirements for radionuclide releases are not included in this protocol.)</p> <p>...</p> <p>Determine if the facility has any releases that are continuous and stable in quantity and rate. (5)</p> <p>Verify that the following notifications have been given: (5)</p> <ul style="list-style-type: none"> - initial telephone notification - initial written notification within 30 days of the initial telephone notification - followup notification within 30 days of the first anniversary date of the initial written notification - notification of changes in: <ul style="list-style-type: none"> - the composition or source of the release - information submitted in the initial written notification - the followup notification required on the first anniversary date of the initial written notification - notification when there is an increase in the quantity of the hazardous substances being released in any 24-h period that represents a statistically significant increase. <p>(NOTE: Instead of the initial written report or followup report, the installation may submit a copy of the Toxic Release Inventory form submitted under SARA Title III, Section 313, for the previous 1 July, provided that conditions are met as described in 40 CFR 302.8(j).)</p> <p>...</p> |

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| <p>3-13. Facilities where an extremely hazardous chemical is produced, used or stored, and where there is a release of a reportable quantity of any extremely hazardous substance or <i>CERCLA</i> hazardous substance, are required to meet specific notification requirements (40 CFR 355.40).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has any extremely hazardous substances (see Appendix 3-1). (5)(6)</p> <p>Verify that a procedure is in place to immediately notify the community emergency coordinator or local emergency planning commission, or Governor if there is no planning committee, of any area likely to be affected, and to notify the state emergency response commission of any state likely to be affected, if a reportable quantity or greater of an extremely hazardous substance or a <i>CERCLA</i> hazardous substance is released. (5)(6)</p> <p>Verify that a procedure is in place to provide a written followup emergency notification as soon as practicable after the release. (5)(6)</p> <p>(NOTE: These notification requirements do not apply to any release:</p> <ul style="list-style-type: none"> - resulting in exposure to people solely within the boundaries of the facility - that is a <i>Federally permitted release</i> as defined by <i>CERCLA</i> - that is continuous and stable except for: <ul style="list-style-type: none"> - initial notification - notification of a statistically significant increase - notification of a new release - notification of any change in the normal range - of a pesticide exempted by <i>CERCLA</i> - meeting the definition of release under <i>CERCLA</i>.) <p>(NOTE: Release refers to a release to the environment - not within a building.)</p> <p style="text-align: center;">...</p> |

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| <p>EMERGENCY PLANNING</p> <p>3-14. Facilities with extremely hazardous substances in amounts equal to or greater than the threshold limits found in Appendix 3-1 are required to follow specific emergency planning procedures (EO 12856, 40 CFR 355.10 through 355.30 and 355 Appendix A).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has any of the items listed in Appendix 3-1 in amounts equal to or greater than those listed in the same appendix. (5)(6)</p> <p>Verify that the facility has notified the state emergency response commission, or Governor if there is no emergency response commission, that the facility is subject to emergency planning requirements within 60 days after the facility first becomes subject to these requirements. (5)(6)</p> <p>Verify that the facility has notified the facility representative or the local emergency planning committee, or Governor if there is no committee, on or before September 1987, or 30 days after establishment of a local emergency planning committee, whichever is earlier. (5)(6)</p> <p>Verify that a representative has been designated to participate in the local emergency planning process as the facility emergency response coordinator. (5)(6)</p> <p>Verify that a procedure is in place to notify the local emergency planning committee of changes at the facility that are relevant to emergency planning. (5)(6)</p> <p>(NOTE: The dates referred to apply to Federally managed facilities/activities.)</p> <p style="text-align: center;">...</p> |

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| <p>RIGHT-TO-KNOW</p> <p>3-15. Facilities that are required to prepare or have available an MSDS for a hazardous chemical under <i>OSHA</i> are required to meet specific reporting requirements (EO 12856 and 40 CFR 370.20 through 370.28).</p> | <p>Verify that MSDSs are submitted to the emergency commission and the fire department with jurisdictions over the facility for each hazardous chemical present at the facility, according to the following thresholds: (5)(6)</p> <ul style="list-style-type: none"> - all hazardous chemicals present at the facility at any one time in amounts equal to or greater than 10,000 lb (4540 kg) - all extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb (227 kg - approximately 55 gal) or the threshold planning quantity (TPQ) whichever is less (see Appendix 3-1). <p>Verify that the facility submitted MSDSs on or before 17 October 1990 (or within 3 mo after the facility became subject to these requirements) for all hazardous chemicals and extremely hazardous substances. (5)(6)</p> <p>Determine that instead of submitting MSDSs, the following have been submitted: (5)(6)</p> <ul style="list-style-type: none"> - a list of hazardous chemicals, for which the MSDS is required, grouped by hazard category - the chemical or common name of each hazardous chemical - any hazardous component of each hazardous chemical, except when reporting mixtures. <p>Verify that revised MSDSs are provided within 3 mo after the discovery of significant new information concerning a hazardous chemical. (5)(6)</p> <p>Verify that a Tier I or Tier II form has been submitted on or before 1 March 1990 (or 1 March of the year after the facility first becomes subject to these requirements), and annually thereafter, to the emergency response commission, emergency planning committee, and fire department with jurisdiction over the facility for: (5)(6)</p> <ul style="list-style-type: none"> - all hazardous chemicals present at the facility at any one time in amounts equal to or greater than 10,000 lb (4540 kg) during the preceding year - extremely hazardous substances present at the facility in amounts greater than or equal to 500 lb (227 kg - approximately 55 gal) or the TPQ, whichever is lower. <p>(NOTE: The dates referred to apply to Federally managed facilities/activities.)</p> |

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| <p>3-16. Facilities which use 10,000 lb [4535.92 kg] or more of a toxic chemical in a year are required to submit USEPA Form R to the USEPA and the state (EO 12856 and 40 CFR 372.25(b) and 372.30).</p> <p style="text-align: center;">...</p> <p>HAZARDOUS MATERIALS STORAGE</p> <p>3-17. Containers of hazardous chemicals in the workplace must be labeled, tagged, or marked with specific information (29 CFR 1910.1200(b)(3)(i), 1910.1200(b)(4)(i), 1910.1200(b)(5), and 1910.1200(f)(5) through 1910.1200(f)(7)).</p> | <p>Determine if the facility uses/stores 10,000 lb [4535.92 kg] or more of a toxic chemical in a year (see Appendix 3-1) by reviewing currently stored amounts and purchasing records.</p> <p>Verify that the report for a calendar year is submitted on or before July 1 of the following year.</p> <p>(NOTE: Reporting for Federally managed facilities/activities was to start as of 1 July 1988.)</p> <p style="text-align: center;">...</p> <p>Verify that all containers of hazardous chemicals in the workplace are labeled with the following information: (5)</p> <ul style="list-style-type: none"> - identity of the hazardous chemical - appropriate hazard warnings. <p>(NOTE: The facility may use signs, placards, process sheets, batch tickets, operating procedures, or other written materials instead of attaching labels to individual stationary process containers as long as the alternate method identifies the containers to which it is applicable.)</p> <p>(NOTE: Portable containers into which hazardous chemicals are transferred from labeled containers and that are intended only for the immediate use of the employee who performs the transfers are not required to be marked.)</p> <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - any pesticide as such term is defined in the <i>Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)</i>, when subject to the labeling requirements and regulations issued under the <i>FIFRA</i> - any chemical substance or mixture as defined by the <i>Toxic Substance Control Act (TSCA)</i> when subject to the labeling requirements of <i>TSCA</i> - any food, food additive, color additive, drug, cosmetic, or medical or veterinary device or product as defined in the <i>Federal Food, Drug, and Cosmetic Act</i> |

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| <p>3-17. (continued)</p> <p>...</p> | <ul style="list-style-type: none"> - any distilled spirits, wine, or malt beverage intended for nonindustrial use as defined in the <i>Federal Alcohol Administration Act</i> - any consumer product or hazardous substance as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i> when subject to a consumer product safety standard or labeling requirements under those acts - agricultural or vegetable seed treated with pesticides and labeled in accordance with the <i>Federal Seed Act.</i>) <p>(NOTE: These requirements do not apply to:</p> <ul style="list-style-type: none"> - hazardous waste - tobacco or tobacco products - wood or wood products - articles which are defined as a manufactured item other than a fluid or particle which under normal conditions of use does not release more than very small amounts of a hazardous chemical and does not pose a physical hazard or health risk to personnel and that: <ul style="list-style-type: none"> - is formed to a specific shape or design during manufacture - has end use functions dependent in whole or in part upon its shape or design during end use - food or alcoholic beverages which are sold, used, or prepared in a retail establishment and foods intended for consumption by personnel - any drug, as that term is defined in the <i>Federal Food, Drug, and Cosmetic Act</i> when it is in its solid, final form for direct administration - cosmetics which are packaged for sale or intended for personnel use - any consumer product or hazardous substance, as defined in the <i>Consumer Product Safety Act</i> and the <i>Federal Hazardous Substances Act</i>, that the facility uses in the workplace in the same manner as normal consumer use, and whose use results in a duration and frequency of exposure no greater than that experienced by consumers - ionizing and nonionizing radiation - biological hazards.) <p>(NOTE: This requirement also applies to laboratories and to work operations during which employees only handle chemicals in sealed containers that are not opened under normal conditions.)</p> <p>...</p> |
| <p>3-18. Specific house-keeping requirements must be met in areas where hazardous materials are stored (29 CFR 1910.176(c)).</p> <p>...</p> | <p>Verify that areas where hazardous materials are stored and/or used around the facility are free from accumulations of materials that create a hazard from tripping, fire, explosion, or pest harborage. (5)(6)</p> <p>(NOTE: The following are suggested housekeeping practices:</p> <ul style="list-style-type: none"> - drums/containers are not leaking and are tightly sealed - drip pans and/or absorbent material are placed under containers - dispensing areas are located away from catch basins and storm drains.) <p>...</p> |

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| <p>3-19. Noncompatible materials that might create a fire hazard are required to be segregated by a barrier with a fire-resistance rating of at least 1 h (EM 385-1-1, para 09.A.08).</p> <p style="text-align: center;">...</p> | <p>Verify that noncompatible materials which might create a fire hazard are segregated by a barrier with a fire-resistance rating of at least 1 h. (5)(6)</p> <p style="text-align: center;">...</p> |
| <p>3-20. Appropriate personal protective equipment and sanitary facilities are required to be provided and used when hazardous substances are transported, used, or stored, and when engineering or work practice controls are neither sufficient nor feasible (EM 385-1-1, para 06.B.02).</p> <p style="text-align: center;">...</p> | <p>Verify that when irritants or hazardous substances might contact skin or clothing, sanitary facilities and protective equipment is provided. (5)(8)(10)(15)(16)(17)</p> <p>Verify that when the eyes or body of any person might be exposed to an injurious substance, suitable facilities for quick drenching or flushing of the eyes and body are provided within the work area for immediate emergency use. (5)(8)(10)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>3-21. All transportation, storage, disposal, and use of hazardous substances must be done under the supervision of a qualified person (EM 385-1-1, para 06.B.03).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility uses hazardous substances. (5)(6)</p> <p>Verify that transportation, storage, disposal, and use is done under the supervision of a qualified person. (5)(6)</p> <p style="text-align: center;">...</p> |
| <p>3-22. Disposal of surplus and excess materials and containers must occur in a manner that will not contaminate or pollute water supply, groundwater, or streams (EM 385-1-1, para 06.B.03(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that surplus or excess materials are not disposed in a manner that would cause environmental contamination. (5)(6)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| HAZARDOUS MATERIALS IN LABORATORIES 3-23. Facilities engaged in the laboratory use of hazardous chemicals are required to have a Chemical Hygiene Plan (29 CFR 1910.1450(e)). | <p>(NOTE: The requirements for hazardous materials in laboratories do not apply to:</p> <ul style="list-style-type: none"> - uses of hazardous chemicals that do not meet the definition of laboratory use - laboratory uses of hazardous chemicals that provide no potential for exposure such as: <ul style="list-style-type: none"> - commercially prepared kits, such as pregnancy tests, in which all the reagents needed to conduct the test are contained in the kit - procedures using chemically impregnated test media such as Dip-and-Read tests.) <p>Verify that a written Chemical Hygiene Plan exists and can: (5)(8)</p> <ul style="list-style-type: none"> - protect employees from health hazards associated with hazardous chemicals in the laboratory - keep exposure to regulated substances below required limits. <p>Verify that the plan is readily available to employees and employee representatives. (5)(8)</p> <p>Verify that the plan includes the following elements and indicates specific measures to be taken when laboratory work involves the use of hazardous chemicals: (5)(8)</p> <ul style="list-style-type: none"> - standard operating procedures (SOPs) relevant to safety and health considerations - criteria used to determine and implement control measures to reduce employee exposure to hazardous chemicals, including the engineering controls, the use of personal protective equipment, and hygiene practices - a requirement that fume hoods and other protective equipment are functioning properly and specific measures are taken to ensure proper and adequate performance of the equipment - provisions for employee information and training - circumstances and situations that require prior approval from a designated individual - provisions for medical consultations and exams - designation of individuals responsible for the implementation of the plan - assignment of a Chemical Hygiene Officer and, if appropriate, establishment of a Chemical Hygiene Committee - provisions for additional employee protection when working with particularly hazardous substances, including select carcinogens, reproductive toxins, and substances that have a high degree of acute toxicity. Provisions might include: <ul style="list-style-type: none"> - establishment of a designated area - use of containment devices such as fume hoods or glove boxes - procedures for safe removal of contaminated waste - decontamination procedures. <p>Verify that the plan is reviewed annually and updated as needed. (5)(8)</p> |

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| <p>3-24. Facilities engaged in the laboratory use of hazardous chemicals are required to provide employees with information and training concerning the hazards of the chemicals in their work areas (29 CFR 1910.1450 (f)).</p> <p style="text-align: center;">...</p> | <p>Verify that information about the hazards of chemicals in the work area is provided at the time of initial employment and prior to assignment involving new exposure risks. (5)(8)</p> <p>(NOTE: The frequency of refresher training is to be determined by the facility.)</p> <p>Verify that employees are informed of the: (5)(8)</p> <ul style="list-style-type: none"> - requirements that they be trained and informed - location and availability of the Chemical Hygiene Plan - permissible exposure limits for <i>OSHA</i>-regulated substances or recommended exposure levels for hazardous chemicals for which there are no <i>OSHA</i> limits - signs and symptoms associated with exposure - location and availability of reference material, such as MSDSs. <p>Verify that training includes: (5)(8)</p> <ul style="list-style-type: none"> - methods and observations that can be used to detect the presence or release of a hazardous chemical - physical and health hazards of chemicals in the work area - measures employees can take to protect themselves - applicable details of the Chemical Hygiene Plan. <p style="text-align: center;">...</p> |
| <p>3-25. Facilities engaged in the laboratory use of hazardous chemicals are required to follow specific handling and operating procedures (29 CFR 1910.1450(h)).</p> <p style="text-align: center;">...</p> | <p>Verify that labels on incoming containers of hazardous chemicals are not removed or defaced. (5)(8)</p> <p>Verify that MSDSs are maintained and readily accessible to lab employees. (5)(8)</p> <p>Verify that if the facility is developing a chemical substance, a determination is made as to whether or not it is a hazardous chemical if the composition of the chemical is known and the chemical is produced only for use by the laboratory. (5)(8)</p> <p>Verify that if the facility is developing a chemical substance as a byproduct and its composition is not known, it is assumed to be hazardous. (5)(8)</p> <p>Verify that if a chemical substance is produced for a user outside the lab, the lab meets the standards outlined in 29 CFR 1910.1200 (see checklist items 3-8 through 3-11). (5)(8)</p> <p style="text-align: center;">...</p> |
| <p>3-26. Facilities engaged in the laboratory use of hazardous chemicals are required to maintain specific records (29 CFR 1910.1450(j)).</p> | <p>Verify that that records of monitoring for employee exposure are maintained along with any medical records or test results. (5)(8)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| FLAMMABLES/ COMBUSTIBLES STORAGE | <p>(NOTE: The requirements pertaining to the handling, storage and use of flammable/combustible liquids with a flashpoint below 200 °F [93.33 °C] outlined through 29 CFR 1910.106 (see checklist items 3-32 and 3-33, 3-35, and 3-38 through 3-49) do not apply to the following (29 CFR 1910.106(j)):</p> <ul style="list-style-type: none"> - bulk transportation of flammable/combustible liquids - storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment - storage of flammable and combustible liquids on farms - liquids without a flashpoint, which may be flammable under some conditions, such as halogenated hydrocarbons and mixtures containing halogenated hydrocarbons - mists, sprays, or foams, except in flammable aerosols - the following facilities when they meet NFPA standards: <ul style="list-style-type: none"> - drycleaning plants - manufacturers of organic coatings - solvent extraction plants - stationary combustion engines and gas turbines.) |
| General | |
| 3-27. Specific GMPs should be considered when storing and handling flammable/combustible materials (GMP). | <p>Verify that the following GMPs are followed: (5)(6)</p> <ul style="list-style-type: none"> - items are not stored against pipes or coils that produce heat - paint drums that are stored horizontally are rolled one-half turn every 90 days - containers of paint are palletized prior to storage - aerosol containers are stored in well-ventilated areas. <p>(NOTE: These GMPs are suggested in DODR 4145.19-1.)</p> |
| <p>...</p> | <p>...</p> |
| 3-28. All tanks, containers, and pumping equipment, portable or stationary, used for the storage and handling of flammable and combustible liquids, is required to be listed by a nationally recognized laboratory for use in such hazardous areas (EM 385-1-1, para 09.B.10). | <p>Verify that all tanks, containers, and pumping equipment used for the storage and handling of flammable and combustible liquids are listed by a nationally recognized laboratory for use. (5)(10)(15)(16)(17)</p> |
| <p>...</p> | <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>3-29. Flammable and combustible liquids in quantities greater than that required for one day's use will not be stored in buildings under construction, and not more than 2 day's supply will be stored on paint barges (EM 385-1-1, para 09.B.25).</p> <p style="text-align: center;">...</p> <p>3-30. Dispensing systems for flammable or combustible liquids are required to meet specific standards (EM 385-1-1, para 09.B.28).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has any buildings under construction and/or a paint barge. (5)(10)(16)</p> <p>Verify that no more than a 1-day supply of flammable/combustible liquids is stored in a building under construction. (5)(10)(16)</p> <p>Verify that no more than a 2-day supply of flammable/combustible liquids is stored on a paint barge. (5)(10)(16)</p> <p style="text-align: center;">...</p> <p>Verify that flammable dispensing systems are electrically bonded and grounded. (15)(16)(17)</p> <p>Verify that all hoses, containers, and tanks of 5 gal [18.92 L] or less are kept in metallic contact while flammable liquids are being transferred. (15)(16)(17)</p> <p>Verify that transfer of flammable liquids in containers in excess of 5 gal is done only when the containers are electrically bonded. (15)(16)(17)</p> <p>Verify that flammable or combustible liquids are drawn from or transferred to storage containers as follows: (15)(16)(17)</p> <ul style="list-style-type: none"> - from or to vessels, containers, or tanks, either within or outside of a building, only through a closed piping system - from safety cans by means of a device drawing through the top - from a container or portable tank, by gravity or pump, through an approved self-closing valve. <p>(NOTE: Transferring flammable/combustible liquids by means of air pressure on the container or portable tank is prohibited.)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>3-31. Containers of flammable/combustible materials are required to be stored and handled according to specific practices (DODR 4145.19-1, para 5-404i and EM 385-1-1, para 09.B.01, para 09.B.02, para 09.B.04, para 09.B.07, para 09.B.08, para 09.B.11, para 09.B.15, para 09.B.15, para 09.B.17, and para 09.B.20).</p> <p style="text-align: center;">...</p> | <p>Verify that all storage, handling, or use of flammable/combustible liquids is done under the supervision of qualified people. (5)(6)</p> <p>Verify that containers are stored and handled such that: (5)(6)</p> <ul style="list-style-type: none"> - open flame devices are not in use in the storage area - there are no positive sources of ignition - combustible materials, other than wood pallets used in the storage of flammable/combustibles, are not stored in the storage facility - handling is done to avoid damaging the label - materials received without a date of manufacture label are marked with the shipping document date - leaking containers are removed immediately from the storage area - containers are stored so that they are issued or used in the order of dates of manufacture, with the oldest material being used first - there are no open containers - adequate ventilation is provided to prevent the accumulation of flammable vapors - a self-closing metal refuse can is provided - unopened containers such as paint, varnish, lacquer, thinner, and solvent are kept in well-ventilated locations free of excessive heat, smoke, sparks, flame, or direct sun - materials that react with water and create a fire hazard are not stored with flammable liquids - containers of over 30 gal [113.56 L] stored indoors are not stacked one upon another. <p>Verify that safety cans, or other portable service containers of flammable liquids with a flashpoint at or below 399 °C (750 °F), are painted red with a yellow band and/or with the name of the contents painted in yellow. (5)(6)</p> <p>Verify that dispensing systems are electrically bonded and grounded. (5)(6)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>3-32. Drums and other containers of less than 60 gal [227.12 L] individual capacity and portable tanks of less than 660 gal [2498.37 L] individual capacity, used to store flammable/combustible materials, are required to meet specific standards (29 CFR 1910.106(d)(1) and 1910.106(d)(2)).</p> <p style="text-align: center;">...</p> | <p>Verify that flammable/combustible liquid containers meet the constraints outlined in Appendix 3-2 except that glass or plastic containers of no more than 1 gal [3.79 L] capacity may be used for a Class IA or IB flammable liquid if: (5)(6)</p> <ul style="list-style-type: none"> - the liquid would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container - the user's process either would require more than 1 pt [0.47 L] of a Class IA liquid or more than 1 qt [0.95 L] of a Class IB liquid of a single assay lot to be used at one time; or the process would require the maintenance of an analytical standard liquid of a quality that is not met by the specified standards of the liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Appendix 3-2 for that class of liquid. <p>Verify that each portable tank has one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 psig or 30 percent of the bursting pressure of the tank, whichever is greater. (5)(6)(16)</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> - storage of containers in service stations - Class I or Class II liquids in the fuel tanks of a motor vehicle, aircraft, boat, or portable or stationary engine - flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period of more than 30 days.) <p style="text-align: center;">...</p> |
| <p>3-33. Flammable/combustible liquids shall not be stored in ways that limit the use of exits, stairways, or areas normally used for the safe passage of people (29 CFR 1910.106(d)(5)(i) and EM 385-1-1, para 09.B.14).</p> <p style="text-align: center;">...</p> | <p>Verify that exits or common traffic routes are not blocked. (5)(6)</p> <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> - storage of containers in service stations - Class I or Class II liquids in the fuel tanks of a motor vehicle, aircraft, boat, or portable or stationary engine - flammable or combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period of more than 30 days.) <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>3-34. No more than 25 gal [94.64 L] of flammable or combustible liquid can be stored in a room outside of an approved metal storage cabinet unless it is an approved flammable material storage room (EM 385-1-1, para 09.B.16(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that if more than 25 gal [94.64 L] of flammable or combustible material is stored within a room that is not an approved flammable material storage room, the excess material is stored in an approved metal storage cabinet. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>3-35. Storage cabinets used for the storage of flammable/combustible liquids must meet specific requirements (29 CFR 1910.106(d)(3) and EM 385-1-1, para 09.B.16(b) and para 09.B.16(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that storage cabinets meet the following: (5)(6)(16)</p> <ul style="list-style-type: none"> - no more than 60 gal [227.12 L] of Class I or Class II liquids, nor any more than 120 gal [454.23 L] of Class III liquids, are stored in the cabinet - the cabinets are fire resistant - cabinets are constantly closed and are conspicuously labeled FLAMMABLE--KEEP FIRE AWAY. <p>Verify that there are no more than three cabinets in a storage area. (5)(6)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>3-36. Storage cabinets used for the storage of flammable/combustible liquids should meet specific requirements (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that storage cabinets meet the following: (5)(6)(16)</p> <ul style="list-style-type: none"> - materials within the cabinet are segregated - there are no open containers within the cabinet - all containers in the cabinet are labeled. <p style="text-align: center;">...</p> |
| <p>3-37. Entrances to flammable or combustible liquid storage or processing buildings are required to be kept locked when not occupied, and only authorized personnel allowed to enter (EM 385-1-1, para 09.B.13).</p> <p style="text-align: center;">...</p> | <p>Verify that the entrances to flammable or combustible liquid storage or processing buildings are kept locked. (15)(16)(17)</p> <p>Verify that only authorized personnel are allowed in the buildings. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>3-38. Flammable/combustible storage rooms inside of buildings must meet certain specifications (29 CFR 1910.106(d)(4)).</p> <p style="text-align: center;">...</p> | <p>Examine the facility's flammable/combustible storage facility for the following: (5)(6)</p> <ul style="list-style-type: none"> - walls meet fire-resistance test NFPA 251-1969 - a 4 in. [10.16 cm] raised sill or ramp is provided to adjacent rooms or buildings, or the floor of the storage area is 4 in. [10.16 cm] lower than the surrounding floors - if sill or ramp is not present, an open grated trench that drains to a safe area is in the building - liquid-tight wall/floor joints exist - self-closing fire doors exist (NFPA 80) - electrical wiring and equipment meet NFPA 70 requirements - storage in the rooms meet the requirements in Appendix 3-3 - there is either a gravity or mechanical exhaust ventilation system - the exhaust system provides for six changes of air in the room per hour - mechanical exhaust systems are controlled by a switch outside the door and have exhaust outlets on exterior walls - for gravity ventilation, the fresh air intake is on exterior walls - there is one clear aisle at least 3 ft [0.91 m] wide - containers over 30 gal [113.56 L] capacity are not stacked one upon the other - dispensing is done by an approved pump or self-closing faucet. <p style="text-align: center;">...</p> |
| <p>3-39. The storage of flammable/combustible liquids in warehouses or storage buildings are required to meet specific requirements (29 CFR 1910.106(d)(5)(vi)).</p> <p style="text-align: center;">...</p> | <p>Verify that the following requirements are met: (5)(6)</p> <ul style="list-style-type: none"> - if the storage facility is located 50 ft [15.24 m] or less from a building or line of adjoining property that may be built upon, the exposing wall is a blank wall with a fire-resistance rating of at least 2 h - any quantity of liquid may be stored as long as the storage arrangements outlined in Appendix 3-4 are met - containers are separated by pallets or dunnage when necessary to provide stability and prevent excess stress on container walls - portable tanks stored over one tier high are designed to nest securely - no pile is closer than 3 ft [0.91 m] to the nearest beam, chord, girder, or other obstruction - piles are 3 ft [0.91 m] below sprinkler deflectors or discharge points of water spray - aisles are at least 3 ft [0.91 m] wide when necessary for access to doors, windows, or standpipe connections - all wood shelving is at least 1 in. [2.54 cm] thick. <p style="text-align: center;">...</p> |

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| <p>3-40. Flammable/combustible materials stored outside of buildings must meet certain storage and handling criteria (29 CFR 1910.106(d)(6)).</p> <p style="text-align: center;">...</p> | <p>Verify that the flammable/combustible storage facility meets the following: (5)(6)(16)</p> <ul style="list-style-type: none"> - no more than 1100 gal [4163.95 L] of flammable/combustible liquids are stored adjacent to buildings located on the same premises unless 10 ft [3.05 m] or more exist between buildings and the nearest flammable container - the storage area is graded to divert spills or is surrounded by a curb at least 6 in. [15.24 cm] high - drains terminate in a safe location - the storage area is protected against tampering - all containers bear contents, labels, and hazard markings - total quantity and arrangement of liquids outside a building complies with the requirements in Appendix 3-4. <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> - storage of containers in service stations - Class I or Class II liquids in the fuel tanks of a motor vehicle, aircraft, boat, or portable or stationary engine - flammable/combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period of more than 30 days.) <p style="text-align: center;">...</p> |
| <p>3-41. Areas where flammable/combustibles are stored must meet certain fire protection standards (29 CFR 1910.106(d)(7)).</p> <p style="text-align: center;">...</p> | <p>Verify that flammable/combustible storage locations meet the following: (5)(6)</p> <ul style="list-style-type: none"> - at least one 12-B rated portable fire extinguisher is located outside and within 10 ft [3.05 m] of the door opening - at least one 12-B rated portable fire extinguisher is located within 10 to 25 ft [3.05 to 7.62 m] of any Class I or Class II liquid storage area, outside of a storage room, but inside the building - fire extinguishing sprinklers or system meet the standards in 29 CFR 1910.159 - no smoking or open flame is permitted within 50 ft [15.24 m] and signs so indicating are posted - incompatible materials are not stored together (see Appendix 3-5) - no water-reactive materials are stored in the same room with flammable/combustible liquids. <p>(NOTE: These standards do not apply to:</p> <ul style="list-style-type: none"> - storage of containers in service stations - Class I or Class II liquids in the fuel tanks of a motor vehicle, aircraft, boat, or portable or stationary engine - flammable/combustible paints, oils, varnishes, or similar mixtures used for painting or maintenance when not kept for a period of more than 30 days.) <p style="text-align: center;">...</p> |

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| <p>Industrial Areas</p> <p>3-42. Areas where flammable/combustible materials are stored, dispensed, or used in industrial plants are required to meet specific guidelines (29 CFR 1910.106(e)(4) through 1910.106(e)(9)).</p> | <p>(NOTE: Items 3-42 through 3-44 pertain to industrial areas where the use of flammable/combustible liquid is incidental to the principal business, or where flammable/combustible liquids are handled or used only in unit physical operations such as drying, evaporating, filtering, distilling, and similar operations that do not involve chemical reactions.)</p> <p>Verify that the following provisions are met: (5)(6)</p> <ul style="list-style-type: none"> - portable fire extinguishers and fire control equipment are in place in quantity and type as needed for the hazards of operation and storage at the site - adequate precautions are taken to prevent sources of ignition at the site - Class I liquids are not dispensed into containers unless nozzles and containers are electrically interconnected - operations such as welding and cutting for repairs to equipment are done under the supervision of an individual in responsible charge - maintenance and operating practices control leakage and prevent the accidental escape of flammable/combustible liquids: <ul style="list-style-type: none"> - adequate aisles are to be maintained - combustible waste material and residues are kept to a minimum, stored in covered metal containers, and disposed of daily - the grounds area around the buildings and unit operating areas are kept free of weeds, trash, or other unnecessary combustibles - tank vehicle and tank car loading or unloading facilities are separated from aboveground tanks, warehouses, and other plant buildings or nearest line of adjoining property by a distance of 25 ft [7.62 m] for Class I liquids and 15 ft [4.57 m] for Class II and III liquids. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>3-43. Incidental storage of flammable/combustible liquids in industrial areas must conform to certain requirements (29 CFR 1910.106(e)(2)).</p> <p>...</p> | <p>Verify that flammable/combustible liquids are stored in closed containers (see Appendix 3-2). (5)(6)</p> <p>Verify that the storage areas meet the requirements outlined in 29 CFR 1910.106(d)(3) and 1910.106(d)(4), as listed in items 3-35 and 3-38, except that: (5)(6)</p> <ul style="list-style-type: none"> - the quantity of liquid that can be located outside of an inside storage room or storage cabinet, in a building or in any one fire area of a building, does not exceed: <ul style="list-style-type: none"> - 25 gal [94.64 L] of Class IA liquids in containers - 120 gal [454.25 L] of Class IB, IC, II, or III liquids in containers - 660 gal [2498.37 L] of Class IA, IB, II, or III liquids in a single portable tank - where large quantities of flammable/combustible liquids are needed, storage may be in tanks. <p>Verify that areas in which flammable/combustible liquids are transferred from one container to another are separated from other operations in the building by an adequate distance or by fire-resistant construction. (5)(6)</p> <p>Verify that drainage or other means are provided to contain spills, and that adequate natural or mechanical ventilation is present. (5)(6)</p> <p>Verify that the following practices are done at the point of final use: (5)(6)</p> <ul style="list-style-type: none"> - flammable liquids are kept in covered containers when not actually in use - where flammable/combustible liquids are used or handled, means are provided to promptly and safely dispose of spills and leaks - Class I liquids are only used where there are no open flames or other sources of ignition - flammable/combustible liquids are drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks by means of gravity through an approved self-closing valve. <p>(NOTE: Transferring flammable or combustible liquids by means of air pressure on the container or portable tanks is prohibited.)</p> <p>...</p> |

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| <p>3-44. Those areas where flammable/combustible liquids are used in unit operations such as mixing, drying, evaporating, filtering, or distilling are required to meet specific operating standards (29 CFR 1910.106(e)(3)).</p> <p style="text-align: center;">...</p> <p>Tanks</p> <p>3-45. Tanks used for the storage of flammable/combustible liquids are required to meet specific design and construction standards (29 CFR 1910.106(b)(1)).</p> <p style="text-align: center;">...</p> | <p>Verify that the following parameters are met: (5)(6)</p> <ul style="list-style-type: none"> - areas are located so that each building or unit of equipment is accessible from at least one side for firefighting - areas in which unstable liquids are handled or small scale unit chemical processes are carried out are separated from the remainder of the area by a fire wall of 2 h minimum fire-resistance rating - emergency drainage systems direct leakage and fire protection water to a safe location - emergency drainage systems, if connected to public sewers or discharged into public waterways, are equipped with traps or a separator - when Class I liquids are being used, ventilation is provided at a rate of not less than 1 ft³/min/ft² of solid floor area through either natural or mechanical means - equipment is designed to limit flammable vapor-air mixtures. <p style="text-align: center;">...</p> <p>Verify that tanks are built of steel unless: (5)(6)</p> <ul style="list-style-type: none"> - the tank is installed underground - the properties of the liquid being stored requires materials other than steel be used - the tank is designed according to specifications embodying principles recognized as good engineering design for the materials used - the tank is of unlined concrete and stores flammable or combustible liquids with a gravity of 40 degrees API or heavier. <p>(NOTE: API gravity is a scale adopted by the American Petroleum Institute for measuring the density of oils.)</p> <p>Verify that tanks located aboveground or inside buildings are of noncombustible construction. (5)(6)</p> <p>(NOTE: Tanks designed for underground service not exceeding 2500 gal [9463.53 L] capacity may be used aboveground and low-pressure tanks and pressure vessels may be used as atmospheric tanks.)</p> <p>Verify that atmospheric tanks are not used for the storage of a flammable or combustible liquid at a temperature at or above its boiling point. (5)(6)</p> <p>Verify that the normal operating pressure of a low pressure tank does not exceed the design pressure of the tank. (5)(6)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>3-46. Outside above-ground tanks used for the storage of flammable/combustible liquids are required to be installed according to specific parameters (29 CFR 1910.106(b)(2)(i) through 1910.106(b)(2)(ii)).</p> | <p>Verify that there is a minimum distance of 3 ft [0.91 m] between any two tanks. (5)(6)</p> <p>Verify that the distance between any two adjacent tanks is not less than one-sixth the sum of their diameters. (5)(6)</p> <p>(NOTE: When the diameter of one tank is less than one-half the diameter of the adjacent tank, the distance between the two tanks is not less than one-half the diameter of the smaller tank.)</p> <p>Verify that where unstable flammable or combustible liquids are stored, the distance between the tanks is not less than one-half the sum of their diameters. (5)(6)</p> <p>Verify that when tanks are compacted in three or more rows, or in an irregular pattern, greater spacing or other means is provided for firefighting access. (5)(6)</p> <p>Verify that there is a minimum distance of 20 ft [6.1 m] between a liquid petroleum gas (LPG) container and a flammable or combustible liquid storage tank. (5)(6)</p> <p>(NOTE: In the case of flammable or combustible liquid tanks operating at pressure exceeding 2.5 psig, or equipped with emergency venting which will permit pressures to exceed 2.5 psig spacing of 3 ft [0.91 m], or the use of the formula concerning one-sixth of diameters may be used.)</p> <p>Verify that means such as diversion curbs or grading are provided to prevent the accumulation of flammable or combustible liquids under adjacent LPG containers. (5)(6)</p> <p>Verify that if flammable/combustible liquid storage tanks are within a diked area, LPG containers are outside the diked area and at least 10 ft [3.05 m] away from the centerline of the wall of the diked area. (5)(6)</p> <p>(NOTE: The requirement concerning LPG containers and diked areas does not apply if LPG containers of 125 gal [473.18 L] or less capacity are installed adjacent to fuel oil supply of 550 gal [2081.98 L] or less capacity.)</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (8) Safety and Occupational Health Office (10) Operations (14) Emergency Management **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>3-47. Tanks for the storage of flammable/combustible liquids must meet specific containment requirements (29 CFR 1910.106(b)(2)(vii)).</p> <p style="text-align: center;">...</p> | <p>Verify that the area surrounding a tank or a group of tanks is either provided with drainage or diked as follows: (5)(6)</p> <ul style="list-style-type: none"> - drainage systems terminate in vacant land or other area or in an impounding basin with a capacity not smaller than that of the largest tank served - diked areas have a volumetric capacity of not less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a fuel tank. <p>Verify that walls of diked areas are of earth, concrete, steel, or solid masonry designed to be liquid tight. (5)(6)</p> <p>Verify that earthen walls 3 ft [0.91 m] or more in height have a top that is no less than 2 ft [0.61 m] wide. (5)(6)</p> <p>Verify that the walls of the diked area are restricted to an average height of 6 ft [1.83 m] above interior grade. (5)(6)</p> <p>Verify that there are no loose combustible materials, or empty or full drums or barrels within the diked area. (5)(6)</p> <p style="text-align: center;">...</p> |
| <p>3-48. In locations where flammable vapors may be present from storage tanks, precautions are required to be taken to prevent ignition (29 CFR 1910.106(b)(6)).</p> <p style="text-align: center;">...</p> | <p>Verify that sources of ignition such as open flames, smoking, welding and cutting, hot surfaces, sparks, and radiant heat are avoided. (5)(6)</p> <p style="text-align: center;">...</p> |
| <p>3-49. Tanks used for the storage of flammable/combustible liquids are required to be strength-tested before being placed into service (29 CFR 1910.106(b)(7)).</p> <p style="text-align: center;">...</p> | <p>Verify that the tank is marked with a American Society of Mechanical Engineers (ASME) code stamp, American Petroleum Institute monogram, or the label of the Underwriter's Laboratory (UL) as evidence of having had a strength test. (5)(6)</p> <p style="text-align: center;">...</p> |

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**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>COMPRESSED GASES</p> <p>3-50. Bulk storage of compressed gases in roofed, open-sided sheds must meet certain criteria (29 CFR 1910.101 and DODR 4145.19-1, para 5-405d(1)).</p> <p>...</p> <p>3-51. Bulk storage of compressed gases in enclosed storage facilities must meet certain criteria (29 CFR 1910.101 and DODR 4145.19-1, para 5-405d(2)).</p> <p>...</p> <p>3-52. Compressed gases are required to be handled according to specific procedures and practices (DODR 4145.19-1, para 5-405c(6) through 5-405c(9), para 5-405c(14), and para 5-405c(22); EM 385-1-1, para 20.D.18).</p> <p>...</p> | <p>Verify that the following criteria are met in areas where compressed gases are stored: (5)(8)(10)</p> <ul style="list-style-type: none"> - shed is situated on a concrete slab above grade - shed is located in a secured area - shed is separated from other buildings by at least 50 ft [15.24 m] - flammable gases and gases that support combustion are stored in different sheds separated by at least 50 ft [15.24 m] - provisions are made to ensure complete change of air at least six times per hour if the shed has one or more sides - shed is not heated - if necessary, stationary or rotating roof vents are used to lower temperature near ceiling to ambient conditions during warm weather - cylinders and portable tanks have pressure relief devices installed. <p>...</p> <p>Verify that the following criteria are followed in areas where compressed gases are stored: (5)(6)</p> <ul style="list-style-type: none"> - building is one story high, preferably of noncombustible construction - separate storage compartments or rooms are available for flammable gases or gases that support combustion - at least one wall of each storage room or compartment for combustible gases is an exterior wall - every storage room or compartment is provided with either a gravity or mechanical exhaust ventilation system designed to provide a complete change of air at least six times per hour - building is not heated. <p>...</p> <p>Verify that the following practices and procedures are followed: (5)(6)</p> <ul style="list-style-type: none"> - oxygen cylinders are free from grease or oil - numbers or markings that are stamped on the cylinders are not altered or defaced - additional markings are not applied to cylinders without approval - empty cylinders are stored separately, but in the same manner as full cylinders - valves on empty cylinders are closed - NO SMOKING signs are posted in and around compressed gas storage sheds. <p>...</p> |

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**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>3-53. Compressed gas cylinders are required to be managed according to specific procedures (EM 385-1-1, para 20.D.03, para 20.D.05 through para 20.D.10, and para 20.D.15).</p> | <p>Verify that compressed gas cylinders meet the following requirements: (5)(6)</p> <ul style="list-style-type: none"> - they are stored in well-ventilated places - cylinders containing oxygen, acetylene, or other fuel gas are not taken into confined spaces - cylinders containing the same gas are stored in a segregated group - they are separated from flammable/combustible materials by at least 40 ft [12.19 m] or by a fire resistive partition - cylinders containing oxygen or oxidizing gases are separated from cylinders in storage containing fuel gases by at least 20 ft [6.1 m] or a fire-resistant partition having at least a 1 h rating - areas containing toxic gases are appropriately placarded - they are protected from extremes of temperature, physical damage, and electrical current - valves are closed, except when in use. <p>Verify that all compressed gas cylinders in service are secured in substantial fixed or portable tracks or hand trucks. (5)(6)</p> <p>Verify that compressed gas cylinders are secured in an upright position at all times, except when being hoisted. (5)(6)</p> <p>(NOTE: Horizontal storage configuration approved for transportation is permitted for cylinders other than acetylene.)</p> <p>Verify that leaking cylinders are moved to an isolated location outdoors, the valved is cracked and tagged DEFECTIVE. (5)(6)</p> |
| <p style="text-align: center;">...</p> <p>ACID STORAGE</p> <p>3-54. Bulk storage of acids must meet certain storage and handling criteria (DODR 4145.19-1, para 5-406).</p> <p style="text-align: center;">...</p> | <p style="text-align: center;">...</p> <p>Verify that bulk acid storage sites meet the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - the building is one story high, preferably of nonflammable construction - there are permanent louvered openings at floor and ceiling levels or another gravity ventilation method exists - there is safety equipment available and operating (eye wash, deluge shower, self-contained breathing apparatus, protective clothing) - the building is heated to prevent freezing (if applicable) - different acids are stored in separate spaces, or are separated by noncombustible sealed barriers at least 3 ft [0.91 m] high - NO SMOKING signs are posted - automatic sprinkler protection is provided - workers are provided with protective safety equipment and a copious, flowing supply of fresh, clean water for first aid. <p style="text-align: center;">...</p> |

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**COMPLIANCE CATEGORY:
HAZARDOUS MATERIALS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>TRANSPORTATION</p> <p>3-55. Transportation of hazardous materials should be done in a manner that prevents spills to the environment, limits exposure risks to personnel, and promotes safe handling practices (GMP).</p> | <p>Determine if Corps personnel transport hazardous materials on- and/or offsite. (10)(15)(16)(17)</p> <p>Verify that precautions are taken during transportation, including the following: (10)(15)(16)(17)</p> <ul style="list-style-type: none"> - MSDSs are available in case of an accident - personnel are trained in how to handle the materials being transported - materials are closed when being transported - vehicles are placarded to indicate the types of materials being transported (see Appendix 3-6). <p>(NOTE: The regulations found in 49 CFR, Subchapter C details requirements for the transportation of hazardous materials. 49 CFR 171.1(c) stipulates that these requirements apply to the transportation of materials in <i>commerce</i>. According to a DOT representative, <i>commerce</i> in this instance is defined in terms of profit; therefore, Subchapter C does not apply to Federal agencies.)</p> |

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Appendix 3-1

Consolidated List of Chemicals Covered in Title III of Superfund Amendments and Reauthorization Act (SARA)

This consolidated chemical list includes chemicals subject to reporting requirements under Title III of SARA of 1986. This consolidated chemical list does not contain all chemicals that are subject to reporting requirements in Section 311 and 312 of SARA Title III. These hazardous chemicals, for which MSDSs must be developed under *OSHA Hazard Communication Standards*, are identified by broad criteria, rather than enumeration. There are over 50,000 such substances that meet the criteria. The consolidated list has been prepared to help determine whether there is a need to submit reports under Section 304 or 313 of Title III and, for a specific chemical, which reports need to be submitted.

The list includes chemicals referenced under the four following Federal statutory provisions:

1. SARA Section 302, Extremely Hazardous Substances - The presence of which, in sufficient quantities, requires certain emergency planning activities to be conducted. Releases of these substances are also subject to reporting under Section 304 of Title III. The final rule listing the extremely hazardous substances and their TPQs, is found in 40 CFR 355.
2. CERCLA Hazardous Substances Chemicals - Releases of which are subject to reporting under the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)* of 1980. Such releases are also subject to reporting under Section 304 of Title III. CERCLA hazardous substances, and their reportable quantities (RQs), are listed in 40 CFR Part 302, Table 302.4.
3. SARA Section 313 Toxic Chemicals - Emissions or releases of which must be reported annually as part of SARA Title III's community right-to-know provisions. A list of these toxic chemicals is found in 40 CFR 372.65.
4. RCRA Hazardous Wastes - from the "P" and "U" lists (40 CFR 261.33) of specific chemicals. RCRA hazardous wastes from the "F" and "K" lists are not included here; such waste streams are also CERCLA hazardous substances. This listing is provided as an indicator that you may already have data on a specific chemical that can be used for Title III reporting purposes.

There are four columns in the consolidated list corresponding to these four statutory provisions. If a chemical is listed as an extremely hazardous substance under Section 302, its TPQ is given in the extremely hazardous substance column. Similarly, the CERCLA RQ is given for those chemicals that are listed as hazardous substances. A key to the symbols used in the Section 302 and CERCLA columns precedes the list. An "X" in the column for Section 313 indicates that the chemical is subject to reporting under Section 313.

The letter-and-digit code in the column for 40 CFR 261.33 is the chemical's RCRA hazardous waste code. A blank in any of these columns indicates that the chemical is not subject to the corresponding statutory authorities.

The Chemical Abstract Service (CAS) registry number is provided for each chemical on the list.

Appendix 3-1 (continued)

Key to Symbols in the Consolidated Chemical List

- # - Indicates that the RQ is subject to change when an assessment of potential carcinogenicity and/or chronic toxicity is completed; until then, the statutory RQ applies.
- ## - Indicates that an adjusted RQ has been proposed, though a final judgment has not been made.
- + - EPA has proposed to adjust the RQ for radionuclides by establishing RQs in units of curies; until then, the 1-lb RQ applies.
- * - Indicates that the chemical is proposed for deletion from the list of extremely hazardous substances.
- ** - Indicates that no RQ is assigned to this generic or broad class.

Appendix 3-1 (continued)

SARA TITLE III CONSOLIDATED CHEMICAL LIST

This is an alphabetical listing of the consolidated list of chemicals.
Numbered chemicals are listed first.

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---------------------------------------|--|-------------------------------------|-----------|
| 1,Amino-2-methyl- anthraquinone | | | x | | 82-28-0 |
| 1-Butanamine,N-butyl-N- nitroso- | | 10 | x | U172 | 924-16-3 |
| 1-Chloro-1,1-difluoroethane (HCFC-142(b)) | | | x | | 75-68-3 |
| 1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a) | | | x | | 354-25-6 |
| 1-Methylbutadiene | | 100 | | U186 | 504-60-9 |
| 1-Naphthalamine | | 100 | x | U167 | 134-32-7 |
| 1-Propanamine | | 5000 | | U194 | 107-10-8 |
| 1-Propanol,2,3-dibromo- phosphate (3:1) | | 10 | x | U235 | 126-72-7 |
| (1,1'-Biphenyl)-4,4' diamine, 3,3' dimethoxy- | | 100 | x | U091 | 119-90-4 |
| (1,1'-Biphenyl)-4,4' diamine, 3,3' dimethyl- | | 10 | x | U095 | 119-93-7 |
| 1,1-Dichloro-1-fluoroethane (HCFC-141b) | | | x | | 1717-80-6 |
| 1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b) | | | x | | 812-04-4 |
| 1,1-Dichloroethane | | 1000 | | U076 | 75-34-3 |
| 1,1-Dichloroethylene | | 100 | x | U078 | 75-35-4 |
| 1,1,1,2-Tetrachloroethane | | | x | | 630-20-6 |
| 1,2-Benzenedicarboxylic acid, [bis(2-ethylhex- yl), ester | | 100 | x | U028 | 117-81-7 |
| 1,2-Benzenedicarboxylic acid, diethyl ester (diethyl phthlate) | | 1000 | x | U088 | 84-66-2 |
| 1,2-Benzenediol,4-[1-hy- droxy-2-(methylamino) ethyl]- | | 1000 | | P042 | 51-43-4 |
| 1,2-Benzisothiazolin-3(2H) one,1,1-dioxide | | 100 | x | U202 | 81-07-2 |
| 1,2-Benzphenanthrene | | 100 | | U050 | 218-01-9 |
| 1,2-Butylene oxide | | | x | | 106-88-7 |
| 1,2-Dibromo-3- chloropropane | | 1 | x | U066 | 96-12-8 |
| 1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a) | | | x | | 354-23-4 |
| 1,2-Dichloroethane | | 100 | x | U077 | 107-06-2 |
| 1,2-Dichloroethylene | | | x | | 540-59-0 |
| 1,2-Dichloropropane | | 1000 | x | U083 | 78-87-5 |
| 1,2-Dimethylhydrazine | | 1 | | U099 | 540-73-8 |
| 1,2-Diphenylhydrazine | | 10 | x | U109 | 122-66-7 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---|---|--|----------------|
| 1,2-Oxathiolane,2,2-dioxide | | 10 | x | U193 | 1120-71-4 |
| 1,2-trans-Dichloroethylene | | 1000 | | U079 | 156-60-5 |
| 1,3-Benzenediol | | 5000 | | U201 | 108-46-3 |
| 1,3-Benzodioxole, 5-propyl | | 10 | | U090 | 94-58-6 |
| 1,3-Benzodioxole,5-)1- 1 propenyl) | | 100 | x | U141 | 120-58-1 |
| 1,3-Benzodioxole, 5-) 2. propenyl) | | 100 | x | U203 | 94-59-7 |
| 1,3-Butadiene | | | x | | 106-99-0 |
| 1,3-Dichloropropylene | | 100 | x | U084 | 542-75-6 |
| 1,3-Isobenzofurandione | | 5000 | x | U190 | 85-44-9 |
| 1,4-Dichloro-2-butene | | | x | | 764-41-0 |
| 1,4-Diethylene dioxide (1,4-Dioxane) | | 100 | x | U108 | 123-91-1 |
| 1,4-Naphthalenedione | | 5000 | | U166 | 130-15-4 |
| 2-Acetylaminofluorene | | 1 | x | U005 | 53-96-3 |
| 2-Aminoanthraquinone | | | x | | 117-79-3 |
| 2-Butanone peroxide | | 10 | | U160 | 1338-23-4 |
| 2-Butanone (Methyl ethyl ketone) | | 5000 | x | U159 | 78-93-3 |
| 2-Butene,1,4-dichloro- | | 1 | | U074 | 764-41-0 |
| 2-Chloro-1,1,2,2-tetrafluoroethane (HCFC 124) | | | x | | 2837-89-0 |
| 2-Chloroacetophenone | | | x | | 532-27-1 |
| 2-Chloroethyl vinyl ether | | 1000 | | U042 | 110-75-8 |
| 2-Chlorophenol | | 100 | | U048 | 95-57-8 |
| 2-Cyclohexyl-4, 6-dinitrophenol | | 100 | | P034 | 131-89-5 |
| 2-Ethoxyethanol | | 100 | x | | 110-80-5 |
| 2-Furancarboxaldehyde | | 5000 | | U125 | 98-01-1 |
| 2-Methoxyethanol | | | x | | 109-86-4 |
| 2-Methylpyridine | | | x | | 109-06-8 |
| 2-Naphthylamine | | 10 | x | U168 | 91-59-8 |
| 2-Nitropropane | | 10 | x | U171 | 79-46-9 |
| 2-Phenylphenol | | | x | | 90-43-7 |
| 2-Picoline | | 5000 | | U191 | 109-06-8 |
| 2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123) | | | x | | 306-83-2 |
| 2,2-Dichloropropionic acid | | 5000 | | | 75-99-0 |
| 2,3-Dichloropropene | | 100 | x | | 78-88-6 |
| 2,3,4-Trichlorophenol | | 10 | x | | 15950-66-0 |
| 2,3,5-Trichlorophenol | | 10 | | | 933-78-8 |
| 2,3,6-Trichlorophenol | | 10 | | | 933-75-5 |
| 2,3,7,8-Tetrachlorodibenzo p-dioxin (TCDD) | | 1 | | | 1746-01-6 |
| 2,4-D acid | | 100 | x | U240 | 94-75-7 |
| 2,4-D esters | | 100 | | | 94-11-1 |
| 2,4-D esters | | 100 | | | 94-79-1 |
| 2,4-D esters | | 100 | | | 94-80-4 |
| 2,4-D esters | | 100 | | | 1320-18-9 |
| 2,4-D esters | | 100 | | | 1928-38-1 |
| 2,4-D esters | | 100 | | | 2971-38-1 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---------------------------------------|--|-------------------------------------|------------|
| 2,4-D esters | | 100 | | | 53467-11-1 |
| 2,4-D esters | | 100 | | | 1928-61-6 |
| 2,4-D esters | | 100 | | | 1929-73-3 |
| 2,4-D esters | | 100 | | | 25168-26-7 |
| 2,4-Diaminoanisole sulfate | | | x | | 39156-41-7 |
| 2,4-Diaminosole | | | x | | 615-41-7 |
| 2,4-Diaminotoluene | | 10 | | U221 | 823-40-5 |
| 2,4-Dichlorophenol | | 100 | x | U081 | 120-83-2 |
| 2,4-Dimethylphenol | | 100 | x | U101 | 105-67-9 |
| 2,4-Dinitrophenol | | 10 | x | P048 | 51-28-5 |
| 2,4,5-T esters | | 1000 | | | 25168-15-4 |
| 2,4,5-T salts | | 1000 | | | 13560-99-1 |
| 2,4,5-T amines | | 5000 | | | 1319-72-8 |
| 2,4,5-T amines | | 5000 | | | 3813-14-7 |
| 2,4,5-T amines | | 5000 | | | 6369-96-6 |
| 2,4,5-T amines | | 5000 | | | 6369-97-7 |
| 2,4,5-T amines | | 5000 | | | 2008-46-0 |
| 2,4,5-T esters | | 1000 | | | 93-79-8 |
| 2,4,5-T esters | | 1000 | | | 1928-47-8 |
| 2,4,5-T esters | | 1000 | | | 2545-59-7 |
| 2,4,5-T esters | | 1000 | | | 61792-07-2 |
| 2,4,5-T | | 1000 | | U232 | 93-76-5 |
| 2,4,5-TP acid esters | | 100 | | | 32534-95-5 |
| 2,5-Furandione | | 5000 | x | U147 | 108-31-6 |
| 2,6-Dichlorophenol | | 100 | | U082 | 87-65-0 |
| 2,6-Xylidine | | | x | | 87-62-7 |
| 3,3-Dichlorobenzidine | | | x | | 91-94-1 |
| 3,4-Diaminotoluene | | 10 | x | U221 | 95-80-7 |
| 3,4-Dinitrotoluene | | 10 | | | 610-39-9 |
| 3,4,5-Trichlorophenol | | 10 | | | 609-19-8 |
| 3,5-Dichloro-N-(1,1-di- methyl-2-propynyl) benzamide | | 5000 | | U192 | 23950-58-5 |
| 4-Aminoazobenzene | | | x | | 60-09-3 |
| 4-Aminobiphenyl | | | x | | 92-67-1 |
| 4-Chloro-m-cresol | | 5000 | | U039 | 59-50-7 |
| 4-Chlorophenyl phenyl ether | | 5000 | | | 7005-72-3 |
| 4-Nitrobiphenyl | | | x | | 92-93-3 |
| 4,4'-Diaminodiphenyl ether | | | x | | 101-80-4 |
| 4,4'-Isopropylidenediphenol | | | x | | 80-05-7 |
| 4,4'-Methylene bis(N,N-di- methyl) benzenamine | | | x | | 101-61-1 |
| 4,4'-Methylenedianiline | | | x | | 101-77-9 |
| 4,4'-Thiodianiline | | | x | | 139-65-1 |
| 6-dinitrophenol | | | | | |
| 5-Nitro-o-anisidine | | | x | | 99-59-2 |
| 5-Nitro-o-toluidine | | | x | | 99-55-6 |
| Acenaphthene | | 100 | | | 83-32-9 |
| Acenaphthylene | | 5000 | | | 208-96-8 |
| Acetaldehyde | | 1000 | x | U001 | 75-07-0 |
| Acetaldehyde, trichloro- Acetamide | | 5000 | | U034 | 75-87-6 |
| | | | x | | 60-35-5 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS N |
|--|--|---|---|--|--------------|
| Acetamide-N-(4-ethoxyphenyl)- | | 100 | | U187 | 62-44-2 |
| Acetamide,N-(aminothioxomethyl)- | | 1000 | | P002 | 591-08-2 |
| Acetic acid | | 5000 | | | 64-19-7 |
| Acetic acid, ethyl ester | | 5000 | | U112 | 141-78-6 |
| Acetic acid, fluoro, sodium salt | 10/10,000 | 10 | | P058 | 62-74-8 |
| Acetic acid, lead(2+) salt | | 10 | | U144 | 301-04-2 |
| Acetic acid, thallium(1+) salt | | 100 | | U214 | 563-68-8 |
| Acetic anhydride | | 5000 | | | 108-24-7 |
| Acetone | | 5000 | x | U002 | 67-64-1 |
| Acetone cyanohydrin | 1000 | 10 | | P069 | 75-86-5 |
| Acetone thiosemicarbazide | 1000/10,000 | | | | 1752-30-3 |
| Acetonitrile | | 5000 | x | U003 | 75-05-8 |
| Acetophenone | | 5000 | x | U004 | 98-86-2 |
| Acetyl bromide | | 5000 | | | 506-96-7 |
| Acetyl chloride | | 5000 | | U006 | 75-36-5 |
| Acrolein | 500 | 1 | x | P003 | 107-02-8 |
| Acrylamide | 1000/10,000 | 5000 | x | U007 | 79-06-1 |
| Acrylic acid | | 5000 | x | U008 | 79-10-7 |
| Acrylonitrile | 10,000 | 100 | x | U009 | 107-13-1 |
| Acrylyl chloride | 100 | | | | 814-68-4 |
| Adipic acid | | 5000 | | | 124-04-2 |
| Adiponitrile | 1000 | | | | 111-69-3 |
| Aldicarb | 100/10,000 | 1 | | P070 | 116-06-3 |
| Aldrin | 500/10,000 | 1 | x | P004 | 309-00-2 |
| Allyl alcohol | 1000 | 100 | x | P005 | 107-18-6 |
| Allyl chloride | | 1000 | x | | 107-05-1 |
| Allylamine | 500 | | | | 107-11-9 |
| alpha,alpha-Dimethyl phenethylamine | | 5000 | | P046 | 122-09-8 |
| alpha-Endosulfan | | 1 | | | 959-98-8 |
| alpha-BHC | | 10 | | | 319-84-6 |
| Aluminum (fume or dust) | | | x | | 7429-90-5 |
| Aluminum oxide (fibrous forms) | | | x | | 1344-28-1 |
| Aluminum phosphide | 500 | 100 | | P006 | 20859-73-8 |
| Aluminum sulfate | | 5000 | | | 10043-01-3 |
| Aminopterin | 500/10,000 | | | | 54-62-6 |
| Amiton | 500 | | | | 78-53-5 |
| Amiton oxalate | 100/10,000 | | | | 3734-97-2 |
| Amitrole | | 10 | x | U011 | 61-82-5 |
| Ammonia | 500 | 100 | x | | 7664-41-7 |
| Ammonium acetate | | 5000 | | | 631-61-8 |
| Ammonium benzoate | | 5000 | | | 1863-63-4 |
| Ammonium bicarbonate | | 5000 | | | 1066-33-7 |
| Ammonium bichromate | | 10 | | | 7789-09-5 |
| Ammonium bifluoride | | 100 | | | 1341-49-7 |
| Ammonium bisulfite | | 5000 | | | 10192-30-0 |
| Ammonium carbamate | | 5000 | | | 1111-78-7 |
| Ammonium carbonate | | 5000 | | | 506-87-2 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--------------------------------|--|---------------------------------------|--|-------------------------------------|------------|
| Ammonium chloride | | 5000 | | | 12125-02-9 |
| Ammonium chromate | | 10 | | | 7788-98-9 |
| Ammonium citrate,dibasic | | 5000 | | | 3012-65-5 |
| Ammonium fluoborate | | 5000 | | | 13826-83-0 |
| Ammonium fluoride | | 100 | | | 12125-01-8 |
| Ammonium hydroxide | | 1000 | | | |
| Ammonium nitrate (solution) | | | x | | 6484-52-2 |
| Ammonium oxalate | | 5000 | | | 5972-73-6 |
| Ammonium oxalate | | 5000 | | | 6009-70-7 |
| Ammonium oxalate | | 5000 | | | 14258-49-2 |
| Ammonium picrate | | 10 | | P009 | 131-74-8 |
| Ammonium silicofluoride | | 1000 | | | 16919-19-0 |
| Ammonium sulfamate | | 5000 | | | 7773-06-0 |
| Ammonium sulfate (solution) | | | x | | 7783-20-2 |
| Ammonium sulfide | | 100 | | | 12135-76-1 |
| Ammonium sulfite | | 5000 | | | 10196-04-0 |
| Ammonium tartrate | | 5000 | | | 14307-43-8 |
| Ammonium tartrate | | 5000 | | | 3164-29-2 |
| Ammonium thiocyanate | | 5000 | | | 1762-95-4 |
| Ammonium vanadate | | 1000 | | P119 | 7803-55-6 |
| Amphetamine | 1000 | | | | 300-62-9 |
| Amyl acetate | | 5000 | | | 628-63-7 |
| Aniline,2,4,6-trimethyl- | 500 | | | | 88-05-1 |
| Aniline | 1000 | 5000 | x | U012 | 62-53-3 |
| Anthracene | | 5000 | x | | 120-12-7 |
| Antimony | | 5000 | x | | 7440-36-0 |
| Antimony pentachloride | | 1000 | | | 7647-18-9 |
| Antimony pentafluoride | 500 | | | | 7783-70-2 |
| Antimony potassium tartrate | | 100 | | | 28300-74-5 |
| Antimony tribromide | | 1000 | | | 7789-61-9 |
| Antimony trichloride | | 1000 | | | 10025-91-9 |
| Antimony trifluoride | | 1000 | | | 7783-56-4 |
| Antimony trioxide | | 1000 | | | 1309-64-4 |
| Antimycin A | 1000/10,000 | | | | 1397-94-0 |
| Antu | 500/10,000 | | | | 86-88-4 |
| Aroclor 1016 | | 1 | | | 12674-11-2 |
| Aroclor 1221 | | 1 | | | 11104-28-2 |
| Aroclor 1232 | | 1 | | | 11141-16-5 |
| Aroclor 1242 | | 1 | | | 53469-21-9 |
| Aroclor 1248 | | 1 | | | 12672-29-6 |
| Aroclor 1254 | | 1 | | | 11097-69-1 |
| Aroclor 1260 | | 1 | | | 11096-82-5 |
| Arsenic | | 1 | x | | 7440-38-2 |
| Arsenic acid | | 1 | | P010 | 1327-52-2 |
| Arsenic acid | | 1 | | P010 | 7778-39-4 |
| Arsenic disulfide | | 1 | | | 1303-32-8 |
| Arsenic pentoxide | 100/10,000 | 1 | | P011 | 1303-28-2 |
| Arsenic trisulfide | | 1 | | | 1303-33-9 |
| Arsenic trioxide | 100/10,000 | 1 | | P012 | 1327-53-3 |
| Arsenous trichloride | 500 | 1 | | | 7784-34-1 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---|---|--|----------------|
| Arsine | 100 | | | | 7784-42-1 |
| Arsine, diethyl- | | 1 | | P038 | 692-42-2 |
| Asbestos | | 1 | x | | 1332-21-4 |
| Azaserine | | 1 | | U015 | 115-02-6 |
| Azinophos-ethyl | 100/10,000 | | | | 2642-71-9 |
| Azinophos-methyl | 10/10,000 | | | | 86-50-0 |
| Barium and compounds | | | x | | 7440-39-3 |
| Barium cyanide | | 10 | | P013 | 542-62-1 |
| Benzal chloride | 500 | 5000 | x | U017 | 98-87-3 |
| Benzamide | | | x | | 55-21-0 |
| Benz[a]anthracene | | 10 | | U018 | 56-55-3 |
| Benzanthracene,7,12- dimethyl- | | 1 | | U094 | 57-97-6 |
| Benz[c]acridine | | 100 | | U016 | 225-51-4 |
| Benzenamine,2-methyl, 5-nitro- | | 100 | | U181 | 99-55-8 |
| Benzenamine,2-methyl, hydrochloride | | 100 | x | U222 | 636-21-5 |
| Benzenamine,3-(trifluoro- methyl)- | 500 | | | | 98-16-8 |
| Benzenamine-4-chloro | | 1000 | | P024 | 106-47-8 |
| Benzenamine,4-chloro-2- methyl-hydrochloride | | 100 | | U049 | 3165-93-3 |
| Benzenenamine, 4-methyl | | 100 | | U353 | 106-49-0 |
| Benzenamine,4-nitro- | | 5000 | | P077 | 100-01-1 |
| Benzenamine 4,4'- methylenebis-2-chloro | | 10 | x | U158 | 101-14-1 |
| Benzenamine,NN-dimeth- yl-4-phenylazo | | 10 | x | U093 | 60-11-7 |
| Benzene | | 10 | x | U019 | 71-43-2 |
| Benzene,1-bromo-4- phenoxy- | | 100 | | U030 | 101-55-3 |
| Benzene,1-(chloro- methyl)-4-nitro- | 500/10,000 | | | | 100-14-1 |
| Benzene,1-methyl-2,4- dinitro- | | 10 | x | U105 | 121-14-2 |
| Benzene,1-methylethyl- (Cumene) | | 5000 | x | U055 | 98-82-8 |
| Benzene,1,2-dichloro | | 100 | x | U070 | 95-50-1 |
| Benzene,1,2,4,5- tetrachloro- | | 5000 | | U207 | 95-94-3 |
| Benzene,1,3-dichloro | | 100 | x | U071 | 541-73-1 |
| Benzene,1,3-diisocy- anatomethyl | | 100 | x | U223 | 26471-62-5 |
| Benzene,1,3,5-trinitro- | | 10 | | U234 | 99-35-4 |
| Benzene,1,4-dichloro | | 100 | x | U072 | 106-46-7 |
| Benzene,2-methyl-1,3- dinitro- | | 100 | x | U106 | 606-20-2 |
| Benzene, chloro- | | 100 | x | U037 | 108-90-7 |
| Benzene, dimethyl- | | 1000 | x | U239 | 1330-20-7 |
| Benzene, hexachloro- | | 10 | x | U127 | 118-74-1 |
| Benzene, hexahydro- (cyclohexane) | | 1000 | x | U056 | 110-82-7 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---|---|--|----------------|
| Benzene, m-dimethyl- | | 1000 | x | | 108-38-3 |
| Benzene, methyl- (toluene) | | 1000 | x | U220 | 108-88-3 |
| Benzene, o-dimethyl- | | 1000 | x | | 95-47-6 |
| Benzene, p-dimethyl- | | 1000 | x | | 106-42-3 |
| Benzene, pentachloro- | | 10 | | U183 | 608-93-5 |
| Benzene, pentachloronitro- | | 100 | x | U185 | 82-68-8 |
| Benzenearsonic acid | 10/10,000 | | | | |
| Benzenesulfonyl chloride | | 100 | | U020 | 98-09-9 |
| Benzidine | | 1 | x | U021 | 92-87-5 |
| Benzimidazole,4,5-di- chloro-2-(trifluoromethyl) | 500/10,000 | | | | 3615-21-2 |
| Benz[j]aceanthrylene,1,2- dihydro-3-methyl- | | 10 | | U157 | 56-49-5 |
| Benzoic acid | | 5000 | | | 65-85-0 |
| Benzo[a]pyrene | | 1 | | U022 | 50-32-8 |
| Benzo[b]fluoranthene | | 1 | | | 205-99-2 |
| Benzo[ghi]perylene | | 5000 | | | 191-24-2 |
| Benzoic acid | | 5000 | | | 65-85-0 |
| Benzo[jk]fluorene | | 100 | | U120 | 206-44-0 |
| Benzo[k]fluoranthene | | 5000 | | | 207-08-9 |
| Benzonitrile | | 5000 | | | 100-47-0 |
| Benzotrichloride | 500 | 10 | x | U023 | 98-07-7 |
| Benzoyl chloride | | 1000 | x | | 98-88-4 |
| Benzoyl peroxide | | | x | | 94-36-0 |
| Benzyl chloride | 500 | 100 | x | P028 | 100-44-7 |
| Benzyl cyanide | 500 | | | | 140-29-4 |
| Beryllium chloride | | 1 | | | 7787-47-5 |
| Beryllium fluoride | | 1 | | | 7787-49-7 |
| Beryllium nitrate | | 1 | | | 13597-99-4 |
| Beryllium nitrate | | 1 | | | 7787-55-5 |
| Beryllium | | 10 | x | P015 | 7440-41-7 |
| beta-Endosulfan | | 1 | | | 33213-65-9 |
| beta-BHC | | 1 | | | 319-85-7 |
| beta-Chloronaphthalene | | 5000 | | U047 | 91-58-7 |
| Bicyclo[2.2.1]heptane-2- carbonitrile,5-chloro-6- (((methyla | 500/10,000 | | | | 15271-41-7 |
| Biphenyl | | | x | | 92-52-4 |
| Bis(2-chloroethoxy) methane | | 1000 | x | U024 | 111-91-1 |
| Bis(2-chloroisopropyl) ether | | 1000 | x | U027 | 108-60-1 |
| Bis(2-ethylhexyl)adipate | | | x | | 103-23-1 |
| Bis(chloromethyl)ketone | 10/10,000 | | | | 534-07-6 |
| Bitoscanate | 500/10,000 | | | | 4044-65-9 |
| Boron trichloride | 500 | | | | 10294-34-5 |
| Boron trifluoride compound with methyl ether (1:1) | 1000 | | | | 353-42-4 |
| Boron trifluoride | 500 | | | | 7637-07-2 |
| Bromadiolone | 100/10,000 | | | | 18772-56-7 |
| Bromine | 500 | | | | 7726-95-6 |
| Bromoacetone | | 1000 | | P017 | 598-31-2 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS |
|---|--|---------------------------------------|--|-------------------------------------|------------|
| Bromochlorodi- fluoromethane (Halon 1211) | | | x | | 357-59-3 |
| Bromoform | | 100 | x | U225 | 75-25-2 |
| Bromotrifluoro- methane (Halon 1301) | | | x | | 75-63-8 |
| Brucine | | 100 | | P018 | 357-57-3 |
| Butanoic acid,4-[bis(2- chloroethyl)amino] benzene- | | 10 | | U035 | 305-03-3 |
| Butyl benzyl Phthalate | | 100 | x | | 85-68-7 |
| Butyl acetate | | 5000 | | | 123-86-4 |
| Butyl acrylate | | | x | | 141-32-2 |
| Butylamine | | 1000 | | | |
| Butyraldehyde | | | x | | 123-72-8 |
| Butyric acid | | 5000 | | | 107-92-6 |
| CI Acid Green 3 | | | x | | 4680-78-8 |
| CI Basic Green 4 | | | x | | 569-64-2 |
| CI Basic Red 1 | | | x | | 989-38-8 |
| CI Direct Black 38 | | | x | | 1937-37-7 |
| CI Direct Blue 6 | | | x | | 2602-46-2 |
| CI Direct Brown 95 | | | x | | 16071-86-6 |
| CI Disperse Yellow 3 | | | x | | 2832-40-8 |
| CI Food Red 15 | | | x | | 81-88-9 |
| CI Food Red 5 | | | x | | 3761-5 |
| CI Solvent Orange 7 | | | x | | 3118-97-0 |
| CI Solvent Yellow 14 | | | x | | 824-07-0 |
| CI Solvent Yellow 34 (Auramine) | | 100 | x | U014 | 492-80-8 |
| CI Solvent Yellow 3 | | | x | | 97-56-3 |
| CI Vat Yellow 4 | | | x | | 128-66-5 |
| Cacodylic acid | | 1 | | U136 | 75-60-5 |
| Cadmium | | 10 | x | | 7440-43-9 |
| Cadmium acetate | | 10 | | | 543-90-8 |
| Cadmium bromide | | 10 | | | 7789-42-6 |
| Cadmium chloride | | 10 | | | 10108-64-2 |
| Cadmium oxide | 100/10,000 | | | | 1306-19-0 |
| Cadmium stearate | 1000/10,000 | | | | 2223-93-0 |
| Calcium arsenate | 500/10,000 | 1 | | | 7778-44-1 |
| Calcium arsenite | | 1 | | | 52740-16-6 |
| Calcium carbide | | 10 | | | 75-20-7 |
| Calcium chromate | | 10 | | U032 | 13765-19-0 |
| Calcium cyanamide | | | x | | 156-62-7 |
| Calcium cyanide | | 10 | | P021 | 592-01-8 |
| Calcium dodecylbenzene sulfonate | | 1000 | | | 26264-06-2 |
| Calcium hypochlorite | | 10 | | | 7778-54-3 |
| Cantharidin | 100/10,000 | | | | 56-25-7 |
| Captan | | 10 | x | | 133-06-2 |
| Carbachol chloride | 500/10,000 | | | | 51-83-2 |
| Carbamic acid, ethyl ester | | 100 | x | U238 | 51-79-6 |
| Carbamic acid, methyl- nitroso-.ethyl ester | | 1 | | U178 | 615-53 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---|---|--|----------------|
| Carbamic acid, methyl-o- (((2,4-dimethyl-1,3- dithiolan-2-y | 100/10,000 | | | | 26419-73-8 |
| Carbamic chloride, dimethyl- | | 1 | x | U097 | 79-44-7 |
| Carbaryl | | 100 | x | | 63-25-2 |
| Carbofuran | 10/10,000 | 10 | | | 1563-66-2 |
| Carbon disulfide | 10,000 | 100 | x | P022 | 75-15-0 |
| Carbon oxyfluoride | | 1000 | | U033 | 353-50-4 |
| Carbon tetrachloride | | 10 | x | U211 | 56-23-5 |
| Carbonyl sulfide | | | x | | 463-58-1 |
| Carbophenothion | 500 | | | 786-19-6 | |
| Catechol | | | x | | 120-80-9 |
| Chloramben | | | x | | 133-90-4 |
| Chlordane | 1000 | 1 | x | U036 | 57-74-9 |
| Chlorfenvinfos | 500 | | | | 470-90-6 |
| Chlorinated fluorocarbon (Freon 113) | | | x | | 76-13-1 |
| Chlorine | 100 | 10 | x | | 7782-50-5 |
| Chlorine cyanide | | 10 | | P033 | 506-77-4 |
| Chlorine dioxide | | | x | | 10049-04-4 |
| Chlormephos | 500 | | | | 24934-91-6 |
| Chlormequat chloride | 100/10,000 | | | | 999-81-5 |
| Chlornaphazine | | 100 | | U026 | 494-03-1 |
| Chloroacetaldehyde | | 1000 | P023 | | 107-20-0 |
| Chloroacetic acid | 100/10,000 | | x | | 79-11-8 |
| Chlorobenzilate | | 10 | x | U038 | 510-15-6 |
| Chlorodibromomethane | | 100 | | | 124-48-1 |
| Chlorodifluoromethane (HCFC-22) | | | x | | 75-45-6 |
| Chloroethane | | 100 | x | | 75-00-3 |
| Chloroethanol | 500 | | | | 107-07-3 |
| Chloroethyl chloroformate | 1000 | | | | 627-11-2 |
| Chloroform | 10,000 | 10 | x | U044 | 67-66-3 |
| Chloromethyl methyl ether | 100 | 10 | x | U046 | 107-30-2 |
| Chlorophacinone | 100/10,000 | | | | 3691-35-8 |
| Chloroprene | | | x | | 126-99-8 |
| Chlorotetrafluoroethane | | | x | | 63938-10-3 |
| Chlorothalonil | | | x | | 1897-45-6 |
| Chloroxuron | 500/10,000 | | | | 1982-47-4 |
| Chlorpyrifos | | 1 | | | 2921-88-2 |
| Chlorsulfonic acid | | 1000 | | | 7790-94-5 |
| Chlorthiophos | 500 | | | | 21923-23-9 |
| Chromic acetate | | 1000 | | | 1066-30-4 |
| Chromic acid | | 10 | | | 11115-74-5 |
| Chromic acid | | 10 | | | 7738-94-5 |
| Chromic chloride | 1/10,000 | | | | 10025-73-7 |
| Chromic sulfate | | 1000 | | | 10101-53-8 |
| Chromium | | 5000 | x | | 7440-47-3 |
| Chromous chloride | | 1000 | | | 10049-05-5 |
| Cobalt | | | x | | 7440-50-8 |
| Cobalt,((2,2'-1,2- ethanediylbis (ni- trilomethylidyne))bis(6) | 100/10,000 | | | | 62207-76-5 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---------------------------------------|--|-------------------------------------|------------|
| Cobalt carbonyl | 10/10,000 | | | | 10210-68-1 |
| Cobaltous bromide | | 1000 | | | 7789-43-7 |
| Cobaltous formate | | 1000 | | | 544-18-3 |
| Cobaltous sulfamate | | 1000 | | | 14017-41-5 |
| Colchicine | 10/10,000 | | | | 64-86-8 |
| Copper | | 5000 | x | | 7440-50-8 |
| Copper cyanide | | 10 | | P029 | 544-92-3 |
| Coumaphos | 100/10,000 | 10 | | | 56-72-4 |
| Coumatetralyl | 500/10,000 | | | | 5836-29-3 |
| Cresol(s) (mixed isomers) | | 1000 | x | U052 | 1319-77-3 |
| Cresol,o- | 1000/10,000 | 1000 | x | U052 | 95-48-7 |
| Creosote | | 1 | x | U051 | 8001-58-9 |
| Crimidine | 100/10,000 | | | | 535-89-7 |
| Crotonaldehyde,(E)- | 1000 | 100 | | U053 | 123-73-9 |
| Crotonaldehyde | 1000 | 100 | | U053 | 4170-30-3 |
| Cumene hydroperoxide | | | x | | 80-15-9 |
| Cupferron | | | x | | 135-20-6 |
| Cupric acetate | | 100 | | | 142-71-2 |
| Cupric chloride | | 10 | | | 7447-39-4 |
| Cupric nitrate | | 100 | | | 3251-23-8 |
| Cupric oxalate | | 100 | | | 5893-66-3 |
| Cupric sulfate | | 10 | | | 7758-98-7 |
| Cupric sulfate ammoniated | | 100 | | | 10380-29-7 |
| Cupric tartrate | | 100 | | | 815-82-1 |
| Cyanides (soluble cyanide salts) | | 10 | | P030 | 57-12-5 |
| Cyanogen | | 100 | | P031 | 460-19-5 |
| Cyanogen bromide | 500/10,000 | 1000 | | U246 | 506-68-3 |
| Cyanogen iodide | 1000/10,000 | | | | 506-78-5 |
| Cyanophos | 1000 | | | | 2636-26-2 |
| Cyanuric fluoride | 100 | | | | 675-14-9 |
| Cyclohexanone | | 5000 | | U057 | 108-94-1 |
| Cycloheximide | 100/10,000 | | | | 66-81-9 |
| Cyclohexylamine | 10,000 | | | | 108-91-8 |
| Cyclophosphamide | | 10 | | U058 | 50-18-0 |
| D-Glucopyranose,2-deoxy- 2-(3-methyl-3-ni- trosoureido)- | | 1 | | U206 | 18883-66-4 |
| Daunomycin | | 10 | | U059 | 20830-81-3 |
| DDD | | 1 | | U060 | 72-54-8 |
| DDE | | 1 | | | 72-55-9 |
| DDT | | 1 | | U061 | 50-29-3 |
| Decaborane(14) | 500/10,000 | | | | 17702-41-9 |
| Decabromodiphenyl oxide | | | x | | 1163-19-5 |
| Delta-BHC | | 1 | | | 319-86-8 |
| Demeton | 500 | | | | 8065-48-3 |
| Demeton-S-methyl | 500 | | | | 919-86-8 |
| Di-(2-ethylhexyl)phthalate (DEHP) | | | x | | 177-81-7 |
| Di-n-octyl phthalate | | 5000 | x | U107 | 117-84-0 |
| Di-n-propylnitrosamine (N-Nitrosodi-n-propylamine) | | 10 | x | U111 | 621-64-1 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---|---|--|----------------|
| Dialifor | 100/10,000 | | | | 10311-84-9 |
| Diallate | | 100 | x | U062 | 2303-16-4 |
| Diaminotoluene | | 10 | x | U221 | 25376-45-8 |
| (mixed isomers) | | | | | |
| Diaminotoluene | | 10 | | | 496-72-0 |
| (mixed isomers) | | | | | |
| Diazinon | | 1 | | | 333-41-5 |
| Diazomethane | | | x | | 334-88-3 |
| Dibenz(a)pyrene | | 10 | | U064 | 189-55-9 |
| Dibenz[a,h] anthracene | | 1 | | U063 | 53-70-3 |
| Dibenzofuran | | | x | | 132-64-9 |
| Diborane | 100 | | | | 19287-45-7 |
| Dibromotetrafluor- ethane (Halon 2402) | | | x | | 124-73-2 |
| Dibutyl phthalate | | 10 | x | U069 | 84-74-2 |
| Dicamba | | 1000 | | | 1918-00-9 |
| Dichlone | | 1 | | | 117-80-6 |
| Dichloro-1,1,2-trifluoroethane | | | x | | 90454-18-5 |
| Dichlorobenzene (mixed isomers) | | 100 | x | | 25321-22-6 |
| Dichlorobromomethane | | 5000 | x | | 75-27-4 |
| Dichlorodifluoromethane | | 5000 | x | U075 | 75-71-8 |
| (CFC-12) | | | | | |
| Dichloroethyl ether | 10,000 | 10 | x | U025 | 111-44-4 |
| Dichloromethyl ether | 100 | 10 | x | P016 | 542-88-1 |
| Dichloromethyl- phenylsilane | 1000 | | | | 149-74-6 |
| Dichloropropane | | 1000 | | | 26638-19-7 |
| Dichloropropane- Dichloropropene | | 100 | | | 8003-19-8 |
| (mixture) | | | | | |
| Dichloropropene | | 100 | | | 26952-23-8 |
| Dichlorotetrafluoro- ethane (CFC-114) | | | x | | |
| Dichlorotrifluoroethane | | | x | | 34077-87-7 |
| Dichlorvos | 1000 | 10 | x | | 62-73-7 |
| Dicholobenil | | 100 | | | 1194-65-6 |
| Dicofol | | | x | | 115-32-2 |
| Dicrotophos | 100 | | | | 141-66-2 |
| Dieldrin | | 1 | | P037 | 60-57-1 |
| Diepoxybutane | 500 | 10 | x | U085 | 1464-53-5 |
| Diethanolamine | | | x | | 111-42-2 |
| Diethyl chlorophosphate | 500 | | | | 814-49-3 |
| Diethyl-p-nitrophenyl phosphate | | 100 | | P041 | 311-45-5 |
| Diethyl sulfate | | | x | | 64-67-5 |
| Diethylamine | | 100 | | | 109-89-7 |
| Diethylcarbamazine citrate | 100/10,000 | | | | 1642-54-2 |
| Diethylstilbestrol | | 1 | | U089 | 56-53-1 |
| Digitoxin | 100/10,000 | | | | 71-63-6 |
| Diglycidyl ether | 1000 | | | | 2238-07-5 |
| Digoxin | 10/10,000 | | | | 20830-75-5 |
| Dihydrosafrole | | | x | | 94-58-6 |
| Diisopropylfluorophosphate | 100 | 100 | | P043 | 55-91-4 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS # |
|--|--|---------------------------------------|--|-------------------------------------|------------|
| Dimefox | 500 | | | | 115-26-4 |
| Dimethoate | 500/10,000 | 10 | | P044 | 60-51-5 |
| Dimethyl-p-phenyl- enediamine | 10/10,000 | | | | 99-98-9 |
| Dimethyl phosphoro- chloridothioate | 500 | | | | 2524-03-0 |
| Dimethyl phthalate | | 5000 | x | U102 | 131-11-3 |
| Dimethyl sulfate | 500 | 100 | x | U103 | 77-78-1 |
| Dimethylamine | | 1000 | | U092 | 124-40-3 |
| Dimethyldichlorosilane | 500 | | | | 75-78-5 |
| Dimethylhydrazine | 1000 | 10 | x | U098 | 57-14-7 |
| Dimetilan | 500/10,000 | | | | 644-64-4 |
| Dinitrobenzene (mixed) | | 100 | | | 25154-54-5 |
| Dinitrophenol | | 10 | | | 25550-58-7 |
| Dinitrotoulene | 10/10,000 | 10 | x | P047 | 534-52-1 |
| Dinitrotoluene (mixed isomers) | | 10 | x | | 25321-14-6 |
| Dinoseb | 100/10,000 | 1000 | | P020 | 88-85-7 |
| Dinoterb | 500/10,000 | | | | 1420-07-1 |
| Dioxathion | 500 | | | | 78-34-2 |
| Diphacinone | 10/10,000 | | | | 82-66-6 |
| Diphosphoramide, octamethyl- | 100 | 100 | | P085 | 152-16-9 |
| Dipropylamine | | 5000 | | U110 | 142-84-2 |
| Diquat | | 1000 | | | 85-00-1 |
| Diquat | | 1000 | | | 2764-72-9 |
| Disulfoton | 500 | 1 | | P039 | 298-04-4 |
| Dithiazinine iodide | 500/10,000 | | | | 514-73-8 |
| Dithiobiuret | 100/10,000 | 100 | | P049 | 541-53-7 |
| Diuron | | 100 | | | 330-54-1 |
| Dodecylbenzenesulf- onic acid | | 1000 | | | 27176-87-0 |
| Emetine, dihydrochloride | 1/10,000 | | | | 316-42-7 |
| Endosulfan | 10/10,000 | 1 | | P050 | 115-29-7 |
| Endosulfan sulfate | | 1 | | | 1031-07-8 |
| Endothall | | 1000 | | P088 | 145-73-3 |
| Endothion | 500/10,000 | | | | 2778-04-3 |
| Endrin | 500/10,000 | 1 | | P051 | 72-20-8 |
| Endrin aldehyde | | 1 | | | 7421-93-4 |
| Epichlorohydrin | 1000 | 100 | x | U041 | 106-89-8 |
| EPN | 100/10,000 | | | | 2104-64-5 |
| Ergocalciferol | 1000/10,000 | | | | 50-14-6 |
| Ergotamine tartrate | 500/10,000 | | | | 379-79-3 |
| Ethanamine, N-ethyl-N- nitroso- | | 1 | x | U174 | 55-18-5 |
| Ethane, 1,1'-oxybis- | | 100 | | U117 | 60-29-7 |
| Ethane, 1,2-dibromo- | | 1 | x | U067 | 106-93-4 |
| Ethane, 1,1,2-trichloro | | 100 | x | U227 | 79-00-5 |
| Ethane, 1,1,1,2- tetrachloro- | | 100 | | U208 | 630-20-6 |
| Ethane, 1,1,2,2- tetrachloro- | | 100 | x | U209 | 79-34-5 |
| Ethane, hexachloro | | 100 | x | U131 | 67-72-1 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---|---|--|----------------|
| Ethanesulfonyl chloride, 2-chloro- | 500 | | | | 1622-32-8 |
| Ethanethioamide | | 10 | x | U218 | 62-55-5 |
| Ethanol, 1,2-dichloro- acetate | 1000 | | | | 10140-87-1 |
| Ethanol, 2,2'-(nitroso imino) bis- | | 1 | | U173 | 1116-54-7 |
| Ethene, tetrachloro | | 100 | x | U210 | 127-18-4 |
| Ethene, chloro- | | 1 | x | U043 | 75-01-4 |
| Ethion | 1000 | 10 | | | 563-12-2 |
| Ethoprophos | 1000 | | | | 13194-48-4 |
| Ethyl acrylate | | 1000 | x | U113 | 140-88-5 |
| Ethyl chloroformate | | | x | | 541-41-3 |
| Ethyl methacrylate | | 1000 | | U118 | 97-63-2 |
| Ethyl methanesulfonate | | 1 | | U119 | 62-50-0 |
| Ethylbenzene | | 1000 | x | | 100-41-4 |
| Ethylbis(2- chloroethyl)amine | 500 | | | | 538-07-8 |
| Ethylene | | | x | | 74-85-1 |
| Ethylene glycol | | | x | | 107-21-1 |
| Ethylene oxide | 1000 | 10 | x | U115 | 75-21-8 |
| Ethylene thiourea | | 10 | x | U116 | 96-45-7 |
| Ethylenebisdithiocarbamic- acid, salts & esters/ | | 5000 | | U114 | 111-54-6 |
| Ethylenediamine | 10,000 | 5000 | | | 107-15-3 |
| Ethylenediamine tetra- acetic acid (EDTA) | | 5000 | | | 60-00-4 |
| Ethyleneimine | 500 | 1 | x | P054 | 151-56-4 |
| Ethylenethiocyanate | 10,000 | | | | 542-90-5 |
| Ethylidene dichloride | | | x | | 75-34-3 |
| Famphur | | 1000 | | P097 | 52-85-7 |
| Fenamiphos | 10/10,000 | | | | 22224-92-6 |
| Fenitrothion | 500 | | | | 122-14-5 |
| Fensulfothion | 500 | | | | 115-90-2 |
| Ferric ammonium citrate | | 1000 | | | 1185-57-5 |
| Ferric ammonium oxalate | | 1000 | | | 2944-67-4 |
| Ferric ammonium oxalate | | 1000 | | | 55488-87-4 |
| Ferric chloride | | 1000 | | | 7705-08-0 |
| Ferric fluoride | | 100 | | | 7783-50-8 |
| Ferric nitrate | | 1000 | | | 10421-48-4 |
| Ferric sulfate | | 1000 | | | 10028-22-5 |
| Ferrous ammonium sulfate | | 1000 | | | 10045-89-3 |
| Ferrous chloride | | 100 | | | 7758-94-3 |
| Ferrous sulfate | | 1000 | | | 7720-78-7 |
| Ferrous sulfate | | 1000 | | | 7782-63-0 |
| Florouracil | 500/10,000 | | | | 51-21-8 |
| Fluometil | 100/10,000 | | | | 4301-50-2 |
| Fluometuron | | | x | | 2164-17-2 |
| Fluorene | | 5000 | | | 86-73-7 |
| Fluorine | 500 | 10 | | P056 | 7782-41-4 |
| Fluoroacetamide | 100/10,000 | 100 | | P057 | 640-19-7 |
| Fluoroacetic acid | 10/10,000 | | | | 144-49-0 |
| Fluoroacetyl chloride | 10 | | | | 359-06-8 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---------------------------------------|--|-------------------------------------|-------------|
| Fonofos | 500 | | | | 944-22-9 |
| Formaldehyde | 500 | 100 | x | U122 | 50-00-0 |
| Formaldehyde cyanohydrin | 1000 | | | | 107-16-4 |
| Formetanate hydrochloride | 500/10,000 | | | | 23422-53-9 |
| Formic acid | | 5000 | x | U123 | 64-18-6 |
| Formothion | 100 | | | | 2540-82-1 |
| Formparanate | 100/10,000 | | | | 17702-57-7 |
| Fosthietan | 500 | | | | 21548-32-3 |
| Fuberidazole | 100/10,000 | | | | 3878-19-1 |
| Fulminic acid, mercur- ry(II) salt | | 10 | | P065 | 628-86-4 |
| Fumaric acid | | 5000 | | | 110-17-8 |
| Furan | 500 | 100 | | U124 | 110-00-9 |
| Furan, tetrahydro- | | 1000 | | U213 | 109-99-9 |
| Gallium trichloride | 500/10,000 | | | | 13450-90-3 |
| Glycidylaldehyde | | 10 | | U126 | 765-33-4 |
| Guanidine,N-nitroso-N methyl-N'-nitro | | 10 | | U163 | 70-25-7 |
| Heptachlor | | 1 | x | P059 | 76-44-8 |
| Heptachlor epoxide | | 1 | | | 1024-57-3 |
| Hexachloro-1,3-butadiene | | 1 | x | U128 | 87-68-3 |
| Hexachlorocyclopentadiene | 100 | 10 | x | U130 | 77-47-4 |
| Hexachloronaphthalene | | | x | | 1335-87-1 |
| Hexachlorophene | | 100 | x | U132 | 70-30-4 |
| Hexachloropropene | | 1000 | | U234 | 1888-7 |
| Hexaethyl tetraphosphate | | 100 | | P062 | 757-58-4 |
| Hexamethylenediamine, N,N'-dibutyl- | 500 | | | | 4835-11-4 |
| Hexamethylphosphoramide | | | x | | 680-31-9 |
| Hydrazine | 1000 | 1 | x | U133 | 302-01-2 |
| Hydrazine sulfate | | | x | | 10034-93-2 |
| Hydrochloric acid (Hydro- gen chloride (gas only))*** | 500 | 5000 | x | | 7647-01-0 |
| Hydrocyanic acid | 100 | 10 | x | P063 | 74-90-8 |
| Hydrogen fluoride | 100 | 100 | x | U134 | 7664-39-3 |
| Hydrogen peroxide (conc > 52%) | 1000 | | | | 7722-84-1 |
| Hydrogen selenide | 10 | | | | 7783-07-5 |
| Hydrogen sulfide | 500 | 100 | x | U135 | 7783-06-4 |
| Hydroquinone | 500/10,000 | | x | | 123-31-9 |
| Indeno(1,2,3-cd)pyrene | | 100 | | U137 | 193-39-5 |
| Iron, pentacarbonyl- | 100 | | | | 13463-40-06 |
| iso-Amyl acetate | | 5000 | | | 123-92-2 |
| iso-Butyl acetate | | 5000 | | | 110-19-0 |
| iso-Butylamine | | 1000 | | | 78-81-9 |
| iso-Butyric acid | | 5000 | | | 79-31-2 |
| Isobenzan | 100/10,000 | | | | 297-78-9 |
| Isobutyl alcohol | | 5000 | | U140 | 78-83-1 |
| Isobutyraldehyde | | | x | | 78-84-2 |
| Isobutyronitrile | 1000 | | | | 78-82-0 |
| Isocyanic acid,3,4- dichlorophenyl ester | 500/10,000 | | | | 102-36 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---|---|--|----------------|
| Isodrin | 100/10,000 | 1 | | P060 | 465-73-6 |
| Isophorone | | 5000 | | | 78-59-1 |
| Isophorone diisocyanate | 100 | | | | 4098-71-9 |
| Isoprene | | 100 | | | 78-79-5 |
| Isopropanolamine dodecylbenzene sulfonate | | 1000 | | | 42504-46-1 |
| Isopropyl alcohol (mfg-strong acid processes) | | | x | | 67-63-0 |
| Isopropyl chloroformate | 1000 | | | | 108-23-6 |
| Isopropylmethylpyrazolyl dimethylcarbamate | 500 | | | | 119-38-0 |
| Kepone | | 1 | | U142 | 143-50-0 |
| Lactonitrile | 1000 | | | | 78-97-7 |
| Lasiocarpine | | 10 | | U143 | 303-34-4 |
| Lead | | 10 | x | | 7439-92-1 |
| Lead arsenate | | 1 | | | 10102-48-4 |
| Lead arsenate | | 1 | | | 7645-25-2 |
| Lead arsenate | | 1 | | | 7784-40-9 |
| Lead chloride | | 10 | | | 7758-95-4 |
| Lead fluoborate | | 10 | | | 13814-96-5 |
| Lead fluoride | | 10 | | | 7783-46-2 |
| Lead iodide | | 10 | | | 10101-63-0 |
| Lead nitrate | | 10 | | | 10099-74-8 |
| Lead phosphate | | 10 | | U145 | 7446-27-7 |
| Lead stearate | | 10 | | | 1072-35-1 |
| Lead stearate | | 10 | | | 52652-59-2 |
| Lead stearate | | 10 | | | 7428-48-0 |
| Lead stearate | | 10 | | | 56189-09-4 |
| Lead subacetate | | 10 | | U146 | 1335-32-6 |
| Lead sulfate | | 10 | | | 15739-80-7 |
| Lead sulfate | | 10 | | | 7446-14-2 |
| Lead sulfide | | 10 | | | 1314-87-0 |
| Lead thiocyanate | | 10 | | | 592-87-0 |
| Leptophos | 500/10,000 | | | | 21609-90-5 |
| Lewisite | 10 | | | | 541-25-3 |
| Lindane | 1000/10,000 | 1 | x | U129 | 58-89-9 |
| Lithium chromate | | 10 | | | 14307-35-8 |
| Lithium hydride | 100 | | | | 7580-67-8 |
| m-Cresol | | 1000 | x | U052 | 108-39-4 |
| m-Nitrophenol | | 100 | | | 554-84-7 |
| m-Nitrotoluene | | 1000 | | | 99-08-1 |
| Malathion | | 100 | | | 121-75-5 |
| Maleic acid | | 5000 | | | 110-16-7 |
| Maleic, hydrazide | | 5000 | | U148 | 123-33-1 |
| Malononitrile | 500/10,000 | 1000 | x | U149 | 109-77-3 |
| Maneb | | | x | | 12427-38-2 |
| Manganese | | | x | | 7439-96-5 |
| Manganese, tricarbonyl methylcyclopentadienyl | 100 | | | | 12108-13-3 |
| Mechlorethamine | 10 | | x | | 51-75-2 |
| Melphalan | | 1 | | U150 | 148-82-3 |
| Mephosfolan | 500 | | | | 950-10-7 |
| Mercuric acetate | 500/10,000 | | | | 1600-27-7 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---|---|--|----------------|
| Mercuric chloride | 500/10,000 | | | | 7487-94-7 |
| Mercuric cyanide | | 1 | | | 592-04-1 |
| Mercuric nitrate | | 10 | | | 10045-94-0 |
| Mercuric oxide | 500/10,000 | | | | 21908-53-2 |
| Mercuric sulfate | | 10 | | | 7783-35-9 |
| Mercuric thiocyanate | | 10 | | | 592-85-8 |
| Mercurous nitrate | | 10 | | | 7782-86-7 |
| Mercurous nitrate | | 10 | | | 10415-75-5 |
| Mercury | | 1 | x | U151 | 7439-97-6 |
| Methacrolein diacetate | 1000 | | | | 10476-95-6 |
| Methacrylic anhydride | 500 | | | | 760-93-0 |
| Methacryloyl chloride | 100 | | | | 920-46-7 |
| Methacryloyloxyethyl isocyanate | 100 | | | | 30674-80-7 |
| Methacrylonitrile | 500 | 1000 | x | U152 | 126-98-7 |
| Methamidophos | 100/10,000 | | | | 10265-92-6 |
| Methane, chloro | | 100 | x | U045 | 74-87-3 |
| Methane, dibromo- | | 1000 | x | U068 | 74-95-3 |
| Methane, dichloro- | | 1000 | x | U080 | 75-09-2 |
| Methane, iodide- | | 100 | x | U138 | 74-88-4 |
| Methane, trichlorofluoro- (CFC-11) | | 5000 | | U121 | 75-69-4 |
| Methanesulfanyl chloride, trichloro | 500 | 100 | | P118 | 594-42-3 |
| Methanesulfonyl fluoride | 1000 | | | | 558-25-1 |
| Methanol | | 5000 | x | U154 | 67-56-1 |
| Methapyrilene | | 5000 | | U155 | 91-80-5 |
| Methidathion | 500/10,000 | | | | 950-37-8 |
| Methiocarb | 500/10,000 | 10 | | | 2032-65-7 |
| Methomyl | 500/10,000 | 100 | | P066 | 16752-77-5 |
| Methoxychlor | | 1 | x | | 72-43-5 |
| Methoxyethylmercuric acetate | 500/10,000 | | | | 151-38-2 |
| Methyl 2-chloroacrylate | 500 | | | | 80-63-7 |
| Methyl acrylate | | | x | | 96-33-3 |
| Methyl bromide | 1000 | 1000 | x | U029 | 74-83-9 |
| Methyl chlorocarbonate | | | x | | 79-22-1 |
| Methyl chloroformate (Methylchlorocarbonate) | 500 | 1000 | | U156 | 79-22-1 |
| Methyl chloroform | | 1000 | x | U226 | 71-55-6 |
| Methyl hydrazine | | 10 | x | P068 | 60-34-4 |
| Methyl isobutyl ketone | | 5000 | x | U161 | 108-10-1 |
| Methyl isocyanate | 500 | 10 | x | P064 | 624-83-9 |
| Methyl isothiocyanate | 500 | | | | 556-61-1 |
| Methyl mercaptan | 500 | 100 | x | U153 | 74-93-1 |
| Methyl methacrylate | | 1000 | x | U162 | 80-62-6 |
| Methyl phenkapton | 500 | | | | 3735-23-7 |
| Methyl phosphonic dichloride | 100 | | | | 676-97-1 |
| Methyl tert-butyl ether | | | x | | 1634-04-4 |
| Methyl thiocyanate | 10,000 | | | | 556-64-9 |
| Methyl vinyl ketone | 10 | | | | 78-94-5 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---------------------------------------|--|-------------------------------------|------------|
| Methylene-bis-(phenyliso- cyanate)(MBI) | | | x | | 101-68-8 |
| Methylmercuric dicy- anamide | 500/10,000 | | | | 502-39-6 |
| Methylthiouracil | | 10 | | U164 | 56-04-2 |
| Methyltrichlorosilane | 500 | | | | 75-79-6 |
| Metolcarb | 100/10,000 | | | | 1129-41-5 |
| Mevinphos | 500 | 10 | | | 7786-34-7 |
| Mexacarbate | 500/10,000 | 1000 | | | 315-18-4 |
| Michler's ketone | | | x | | 90-94-8 |
| Mitomycin C | 500/10,000 | 10 | | U010 | 50-07-7 |
| Molybdenum trioxide | | | x | | 1313-27-5 |
| Moncrotophos | 10/10,000 | | | | 6923-22-4 |
| (Mono)chloropenta- fluoroethane (CFC 115) | | | x | | 76-15-3 |
| Monoethylamine | | 100 | | | 75-04-7 |
| Monomethylamine | | 100 | | | 74-89-5 |
| Muscimol | 500/10,000 | 1000 | | P007 | 2763-96-4 |
| Mustard gas | 500 | | x | | 505-60-2 |
| n-Butyl alcohol | | | x | | 71-36-3 |
| N,N'-Dimethylaniline | | | x | | 121-69-7 |
| N,N'-Diethylhydrazine | | 10 | | U086 | 1615-80-1 |
| N-Nitroso-N-ethylurea | | 1 | x | | 759-73-9 |
| N-Nitroso-N-methylurea | | 1 | x | | 684-93-5 |
| N-Nitrosodiphenylamine | | 100 | x | | 86-30-6 |
| N-Nitrosomethylvinylamine | | 10 | x | | 4549-40-0 |
| N-Nitrosomorpholine | | | x | | 59-89-2 |
| N-Nitrosonormicotine | | | x | | 16543-55-8 |
| N-Nitrosopiperidine | | 10 | x | U179 | 100-75-4 |
| N-Nitrosopyrrolidine | | 1 | | U180 | 930-55-2 |
| Naled | | 10 | | | 300-76-5 |
| Naphthalene | | 100 | x | U165 | 91-20-3 |
| Naphthenic acid | | 100 | | | 1338-24-5 |
| Nickel | | 100 | x | | 7440-02-0 |
| Nickel ammonium sulfate | | 100 | | | 15699-18-0 |
| Nickel carbonyl | 1 | 10 | | P073 | 13463-39-3 |
| Nickel chloride | | 100 | | | 37211-05-5 |
| Nickel chloride | | 100 | | | 7718-54-9 |
| Nickel cyanide | | 10 | | P074 | 557-19-7 |
| Nickel hydroxide | | 10 | | | 12054-48-7 |
| Nickel nitrate | | 100 | | | 14216-75-2 |
| Nickel sulfate | | 100 | | | 7786-81-4 |
| Nicotine | 100 | 100 | | P075 | 54-11-5 |
| Nicotine sulfate | 100/10,000 | | | | 65-30-5 |
| Nitric acid | 1000 | 1000 | x | | 7697-37-2 |
| Nitric oxide | 100 | 10 | | P076 | 10102-43-9 |
| Nitrilotriacetic acid | | | x | | 139-13-9 |
| Nitrobenzene | 10,000 | 1000 | x | U169 | 98-95-3 |
| Nitrocyclohexane | 500 | | | | 1122-60-7 |
| Nitrofen | | | x | | 1836-75-5 |
| Nitrogen dioxide | 100 | 10 | | P078 | 10102-44-0 |
| Nitrogen dioxide | | 10 | | P078 | 10544-72-6 |
| Nitroglycerine | | 10 | x | P081 | 55-63-0 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---|---|--|----------------|
| Nitrophenol (mixed) | | 100 | | | 25154-55-6 |
| Nitrosodimethylamine | 1000 | 10 | x | P082 | 62-75-9 |
| Nitrotoluene | | 1000 | | | 1321-12-6 |
| Norbormide | 100/10,000 | | | | 991-42-4 |
| O,O-Diethyl S-methyl dithiophosphate | | 5000 | | U087 | 3288-58-2 |
| o-Anisidine hydrochloride | | | x | | 134-29-2 |
| o-Anisidine | | | x | | 90-04-0 |
| o-Dinitrobenzene | | 100 | x | | 528-29-0 |
| o-Nitrophenol | | 100 | x | | 88-75-5 |
| o-Nitrotoluene | | 1000 | | | 88-72-2 |
| o-Toluidine | | 100 | x | U328 | 95-53-4 |
| Octachloronaphthalene | | | x | | 2234-13-1 |
| Osmium tetroxide | | 1000 | x | P087 | 20816-12-0 |
| Ouabain | 100/10,000 | | | | 630-60-4 |
| Oxamyl | 100/10,000 | | | | 23135-22-0 |
| Oxetane,3,3- bis(chloromethyl)- | 500 | | | | 78-71-7 |
| Oxydisulfoton | 500 | | | | 2497-07-6 |
| Ozone | 100 | | | | 10028-15-6 |
| p-Anisidine | | | x | | 104-94-9 |
| p-Benzoquinone | | 10 | x | U197 | 106-51-4 |
| p-Cresidine | | | x | | 120-71-8 |
| p-Cresol | | 1000 | x | U052 | 106-44-5 |
| p-Dinitrobenzene | | 100 | x | | 100-25-1 |
| p-Nitrophenol | | 100 | x | U170 | 100-02-7 |
| p-Nitrosodiphenylamine | | | x | | 156-10-5 |
| p-Nitrotoluene | | 1000 | | | 99-99-0 |
| p-Phenylenediamine | | | x | | 106-50-3 |
| Paraformaldehyde | | 1000 | | | 30525-89-4 |
| Paraldehyde | | 1000 | x | | 123-63-7 |
| Paraquat | 10/10,000 | | | | 1910-42-5 |
| Paraquat methosulfate | 10/10,000 | | | | 2074-50-2 |
| Parathion | 100 | 10 | x | P089 | 56-38-2 |
| Parathion, methyl | 100/10,000 | 100 | | P071 | 298-00-0 |
| Paris green (Cuprie acetoarsenite) | 500/10,000 | 1 | | | 12002-03-8 |
| Pentaborane | 500 | | | | 19624-22-7 |
| Pentachloroethane | | 10 | x | U184 | 76-01-7 |
| Pentachlorophenol | | 10 | x | U242 | 87-86-5 |
| Pentadecyclamine | 100/10,000 | | | | 2570-26-5 |
| Peracetic acid | 500 | | x | | 79-121-0 |
| Phenanthrene | | 5000 | | | 85-01-8 |
| Phenol | 500/10,000 | 1000 | x | U188 | 108-95-2 |
| Phenol,2,2'-thiobis (4-chloro-6-methyl | 100/10,000 | | | | 4418-66-0 |
| Phenol,2,3,4,6-tetrachloro | | 10 | | U212 | 58-90-2 |
| Phenol,2,4,5-trichloro | | 10 | x | U230 | 95-95-4 |
| Phenol,2,4,6-trichloro | | 10 | x | U231 | 88-06-2 |
| Phenol,3-(1-methylethyl), methylcarbamate | 500/10,000 | | | | 64-00-6 |
| Phenoxarsine,10,10'-oxydi- | 500/10,000 | | | | 58-36-7 |
| Phenyl dichloroarsine | 500 | 1 | | P036 | 696-28-1 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|--|--|---|---|--|----------------|
| Phenylhydrazine hydrochloride | 1000/10,000 | | | | 59-88-1 |
| Phenylmercury acetate | 500/10,000 | 100 | | P092 | 62-38-4 |
| Phenylsilatrane | 100/10,000 | | | | 2097-19-0 |
| Phenylthiourea | 100/10,000 | 100 | | P093 | 103-85-5 |
| Phorate | 10 | 10 | | P094 | 298-02-2 |
| Phosacetim | 100/10,000 | | | | 4104-14-7 |
| Phosfolan | 100/10,000 | | | | 947-02-4 |
| Phosgene | 10 | 10 | x | P095 | 75-44-5 |
| Phosmet | 10/10,000 | | | | 732-11-6 |
| Phosphamidon | 100 | | | | 13171-21-6 |
| Phosphine | 500 | 100 | | P096 | 7803-51-2 |
| Phosphonothioic acid methyl-O-(4-nitrophenyl)O-phenyl ester | 500 | | | | 2665-30-7 |
| Phosphonothioic acid, methyl-O-ethyl-O-(4-(methylthio)phenyl) Ester | 500 | | | | 2703-13-1 |
| Phosphonothioic acid, methyl-s-(2-(bis(1-methylethyl)amino Ethyl o-Ethyl Ester | 100 | | | | 50782-69-9 |
| Phosphoric acid | | 5000 | x | | 7664-38-2 |
| Phosphoric acid, dimethyl 4-(methylthio)phenyl ester | 500 | | | | 3254-63-5 |
| Phosphorothioic acid O,O-diethyl, O-pyrazinyl ester | 500 | 100 | | P040 | 297-97-2 |
| Phosphorothioic acid,O,O- dimethyl-S-(2-methylthio)ethyl est | 500 | | | | 2587-90-8 |
| Phosphorus | 100 | 1 | x | | 7723-14-0 |
| Phosphorus oxychloride | 500 | 1000 | | | 10025-87-3 |
| Phosphorus pentachloride | 500 | | | | 10026-13-8 |
| Phosphorus pentasulfide | | 100 | | U189 | 1314-80-3 |
| Phosphorus pentoxide | 10 | | | | 1314-56-3 |
| Phosphorus trichloride | 1000 | 1000 | | | 7719-12-2 |
| Physostigmine | 100/10,000 | | | | 57-47-6 |
| Physostigmine, salicylate (1:1) | 100/10,000 | | | | 57-64-7 |
| Picric acid | | | x | | 88-89-1 |
| Picrotoxin | 500/10,000 | | | | 124-87-8 |
| Piperidine | 1000 | | | | 110-89-4 |
| Pyrimifos-ethyl | 1000 | | | | 23505-41-1 |
| Polychlorinated biphenyls (PCBs) | | 1 | x | | 1336-36-3 |
| Potassium arsenate | | 1 | | | 7784-41-0 |
| Potassium arsenite | 500/10,000 | 1 | | | 10124-50-2 |
| Potassium bichromate | | 10 | | | 7778-50-9 |
| Potassium chromate | | 10 | | | 7789-00-6 |
| Potassium cyanide | 100 | 10 | | P098 | 151-50-8 |
| Potassium hydroxide | | 1000 | | | 1310-58-3 |
| Potassium permanganate | | 100 | | | 7722-64-7 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---------------------------------------|--|-------------------------------------|------------|
| Potassium silver cyanide | 500 | 1 | | P099 | 506-61-6 |
| Promecarb | 500/10,000 | | | | 2631-37-0 |
| Pronamide | | | x | | 23950-58-5 |
| Propargite | | 10 | | | 2312-35-8 |
| Propargyl alcohol | | 1000 | | P102 | 107-19-7 |
| Propargyl bromide | 10 | | | | 106-96-7 |
| Propiolactone, beta- | 500 | | x | | 57-57-8 |
| Propionaldehyde | | | x | | 123-38-6 |
| Propionic acid | | 5000 | | | 79-09-4 |
| Propionic acid, 2-(2,4,5- trichlorophenoxy)- | | 100 | | U233 | 93-72-1 |
| Propionic anhydride | | 5000 | | | 123-62-6 |
| Propiophenone, 4'-amino- | 100/10,000 | | | | 70-69-9 |
| Propenenitrile | 500 | 10 | | P101 | 107-12-0 |
| Propenenitrile, 3-chloro- | 1000 | 1000 | | P027 | 542-76-7 |
| Propoxur | | | x | | 114-26-1 |
| Propyl chloroformate | 500 | | | | 109-61-5 |
| Propylene (Propene) | | | x | | 115-07-1 |
| Propylene oxide | 10,000 | 100 | x | | 75-56-9 |
| Propyleneimine | 10,000 | 1 | x | P067 | 75-55-8 |
| Prothoate | 100/10,000 | | | | 2275-18-5 |
| Pyrene | 1000/10,000 | 5000 | | | 129-00-0 |
| Pyrethrins | | 1 | | | 121-21-1 |
| Pyrethrins | | 1 | | | 121-29-9 |
| Pyrethrins | | 1 | | | 8003-3 |
| Pyridine | | 1000 | x | U196 | 110-86-1 |
| Pyridine, 2-methyl-5-vinyl- | 500 | | | | 140-76-1 |
| Pyridine, 4-amino- | 500/10,000 | 1000 | | P008 | 504-24-5 |
| Pyridine, 4-nitro-1-oxide | 500/10,000 | | | | 1124-33-0 |
| Pyriminil | 100/10,000 | | | | 53558-25-1 |
| Quinoline | | 5000 | x | | 91-22-5 |
| Reserpine | | 5000 | | U200 | 50-55-5 |
| Salcomine | 500/10,000 | | | | 14167-18-1 |
| Sarin | 10 | | | | 107-44-8 |
| sec-Amyl acetate | | 5000 | | | 626-38-0 |
| sec-Butyl acetate | | 5000 | | | 105-46-4 |
| sec-Butyl alcohol | | | x | | 78-92-2 |
| sec-Butylamine | | 1000 | | | 13952-84-6 |
| sec-Butylamine | | 1000 | | | 513-49-5 |
| Selenium | | 100 | x | | 7782-49-2 |
| Selenium dioxide | | 10 | | U204 | 7446-08-4 |
| Selenium disulfide | | 10 | | U205 | 7448-56-4 |
| Selenium oxychloride | 500 | | | | 7791-23-3 |
| Selenious acid | 1000/10,000 | 10 | | U204 | 7783-00-8 |
| Selenouree | | 1000 | | P103 | 630-10-4 |
| Semicarbazide hydro- chloride | 1000/10,000 | | | | 563-41-7 |
| Silane, (4-aminobutyl) diethoxymethyl- | 1000 | | | | 3037-72-7 |
| Silver | | 1000 | x | | 7440-22-4 |
| Silver cyanide | | 1 | | P104 | 506-64-9 |
| Silver nitrate | | 1 | | | 7761-88 |
| Sodium | | 10 | | | 7440-2 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|------------------------------------|--|---|---|--|----------------|
| Sodium arsenate | 1000/10,000 | 1 | | | 7631-89-2 |
| Sodium arsenite | 500/10,000 | 1 | | | 7784-46-5 |
| Sodium azide (Na(N ₃)) | 500 | 1000 | | P105 | 26628-22-8 |
| Sodium bichromate | | 10 | | | 10588-01-9 |
| Sodium bifluoride | | 100 | | | 1333-83-1 |
| Sodium bisulfite | | 5000 | | | 7631-90-5 |
| Sodium cacodylate | 100/10,000 | | | | 124-65-2 |
| Sodium chromate | | 10 | | | 7775-11-3 |
| Sodium cyanide (Na(CN)) | 100 | 10 | | P106 | 143-33-9 |
| Sodium dodecylbenzene sulfonate | | 1000 | | | 25155-30-0 |
| Sodium fluoride | | 1000 | | | 7681-49-4 |
| Sodium fluoroacetate | 10/10,000 | 10 | | P058 | 62-74-8 |
| Sodium hydrosulfide | | 5000 | | | 16721-80-5 |
| Sodium hydroxide | | 1000 | | | 1310-73-2 |
| Sodium hypochlorite | | 100 | | | 10022-70-5 |
| Sodium hypochlorite | | 100 | | | 7681-52-9 |
| Sodium methylate | | 1000 | | | 124-41-4 |
| Sodium nitrite | | 100 | | | 7632-00-0 |
| Sodium phosphate,dibasic | | 5000 | | | 10039-32-4 |
| Sodium phosphate,dibasic | | 5000 | | | 10140-65-5 |
| Sodium phosphate,dibasic | | 5000 | | | 7558-79-4 |
| Sodium phosphate,tribasic | | 5000 | | | 10101-89-0 |
| Sodium phosphate,tribasic | | 5000 | | | 10124-56-8 |
| Sodium phosphate,tribasic | | 5000 | | | 10361-89-4 |
| Sodium phosphate,tribasic | | 5000 | | | 7601-54-9 |
| Sodium phosphate,tribasic | | 5000 | | | 7758-29-4 |
| Sodium phosphate,tribasic | | 5000 | | | 7785-84-4 |
| Sodium selenate | 100/10,000 | | | | 13410-01-0 |
| Sodium selenite | 100/10,000 | 100 | | | 10102-18-8 |
| Sodium selenite | | 100 | | | 7782-82-3 |
| Sodium tellurite | 500/10,000 | | | | 10102-20-2 |
| Strannane,acetox- triphenyl- | 500/10,000 | | | | 900-95-8 |
| Strontium chromate | | 10 | | | 7789-06-2 |
| Strychnine | 100/10,000 | 10 | | P108 | 57-24-9 |
| Strychnine, sulfate | 100/10,000 | | | | 60-41-3 |
| Styrene | | 1000 | x | | 100-42-5 |
| Styrene oxide | | | x | | 96-09-3 |
| Sulfotep | 500 | 100 | | P109 | 3689-24-5 |
| Sulfoxide,3-chloropropyl octyl | 500 | | | | 3569-57-1 |
| Sulfur dioxide | 500 | | | | 7446-09-5 |
| Sulfur monochloride | | 1000 | | | 12771-08-3 |
| Sulfur tetrafluoride | 100 | | | | 7783-60-0 |
| Sulfur trioxide | 100 | | | | 7446-11-9 |
| Sulfuric acid | 1000 | 1000 | x | | 7664-93-9 |
| Sulfuric acid | | 1000 | | | 8014-95-7 |
| Tabun | 10 | | | | 77-81-6 |
| Tellurium | 500/10,000 | | | | 13494-80-9 |
| Tellurium hexafluoride | 100 | | | | 7783-80-4 |
| Tetraethyldithiopyr phosphate | 100 | 10 | | P111 | 107-49-3 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS N |
|--|--|---------------------------------------|--|-------------------------------------|------------|
| Terbufos | 100 | | | | 13071-79-9 |
| tert-Amyl acetate | | 5000 | | | 625-16-1 |
| tert-Butyl acetate | | 5000 | | | 540-88-5 |
| tert-Butyl alcohol | | | x | | 75-65-0 |
| tert-Butylamine | | 1000 | | | 75-64-9 |
| Tetrachlorvinphos | | | x | | 961-11-5 |
| Tetraethyllead | 100 | 10 | | P110 | 78-00-2 |
| Tetraethyltin | 100 | | | | 597-64-8 |
| Tetramethyl Lead | 100 | | | | 75-74-1 |
| Tetranitromethane | 500 | 10 | | P112 | 509-14-8 |
| Thallic oxide | | 100 | | P113 | 1314-32-5 |
| Thallium | | 1000 | x | | 7440-28-0 |
| Thallium(I) carbonate | 100/10,000 | 100 | | U215 | 6553-73-9 |
| Thallium (I)sulfate | 100/10,000 | 100 | | P115 | 10031-59-1 |
| Thallium(I)nitrate | | 100 | | U217 | 10102-45-1 |
| Thallium(I)selenide | | 1000 | | P114 | 12039-52-0 |
| Thalious chloride | 100/10,000 | 100 | | U216 | 7791-73-9 |
| Thalious malonate | 100/10,000 | | | | 2757-18-8 |
| Thalious sulfate | 100/10,000 | 100 | | P115 | 7446-18-6 |
| Thiocarbazide | 1000/10,000 | | | | 2231-57-4 |
| Thiofanox | 100/10,000 | 100 | | P045 | 39196-18-4 |
| Thiram | | 10 | x | U244 | 137-26-8 |
| Thiophenol | 500 | 100 | | P014 | 108-98-5 |
| Thiosemicarbazide | 100/10,000 | 100 | | P116 | 79-19-6 |
| Thiourea | | 10 | x | | 62-56-1 |
| Thiourea,(2-chlorophenyl)- | 100/10,000 | 100 | | P026 | 5344-82-1 |
| Thiourea,(2-methylphenyl)- | 500/10,000 | | | | 614-78-8 |
| Thorium dioxide | | | x | | 1314-20-1 |
| Titanium dioxide | | | x | | 13463-67-7 |
| Titanium tetrachloride | 100 | | x | | 7550-45-0 |
| Toluene2,4-diisocyanate | 500 | 100 | x | | 584-84-9 |
| Toluene2,6-diisocyanate | 100 | 100 | x | | 91-08-7 |
| Toxaphene(Campheclor) | | 1 | x | P123 | 8001-35-2 |
| Trans 1,1-dichlorobutene | 500 | | | | 110-57-6 |
| Triamiphos | 500/10,000 | | | | 1031-47-6 |
| Triaziquone | | | x | | 68-76-8 |
| Triazofos | 500 | | | | |
| Trichloroacetyl chloride | 500 | | | | 76-02-8 |
| Trichloro(chloromethyl) silane | 100 | | | | 1558-25-4 |
| Trichloro(dichlorophenyl) silane | 500 | | | | 27137-85-5 |
| Trichloroethylene | | 100 | x | U228 | 79-01-6 |
| Trichloroethylsilane | 500 | | | | 115-21-9 |
| Trichlorofon | | 100 | x | | 52-68-6 |
| Trichloronate | 500 | | | | 327-98-0 |
| Trichlorophenol | | 10 | | | 25167-82-2 |
| Trichlorophenylsilane | 500 | | | | 98-13-5 |
| Triethanolamine dodecylbenzene sulfonate | | 1000 | | | 27323-41-7 |
| Triethoxysilane | 500 | | | | 998-30-1 |
| Triethylamine | | 5000 | | | 121-44-1 |

Appendix 3-1 (continued)

| Chemical Name | Extremely Haz Sub 40 CFR 355 (lb) | Haz Sub RQ 40 CFR 302.4 (lb) | Toxic Chemicals 40 CFR 372.65(a) | Haz Mat which are RCRA wastes | CAS No. |
|---|--|---|---|--|----------------|
| Trifluralin | | | x | | 1582-09-8 |
| Trimethylamine | | 100 | | | 75-50-3 |
| Trimethylchlorosilane | 1000 | | | | 75-77-4 |
| Trimethylolpropane phosphite | 100/10,000 | | | | 824-11-3 |
| Trimethyltin chloride | 500/10,000 | | | | 1066-45-1 |
| Triphenyltin chloride | 500/10,000 | | | | 639-58-7 |
| Tris(2-chloroethyl)amine | 100 | | | | 555-77-1 |
| Trypan blue | | 10 | x | U236 | 72-57-1 |
| Uracil,5-[bis(2- chloroethyl)amino]- | | 10 | | U237 | 66-75-1 |
| Uranyl acetate | | 100 | | | 541-09-3 |
| Uranyl nitrate | | 100 | | | 10102-06-4 |
| Uranyl nitrate | | 100 | | | 36478-76-9 |
| Valinomycin | 1000/10,000 | | | | 2001-95-8 |
| Vanadium(fume or dust) | | | x | | 7440-62-2 |
| Vanadium pentoxide | 100/10,000 | 1000 | | P120 | 1314-62-1 |
| Vanadyl sulfate | | 1000 | | | 27774-13-6 |
| Vinyl acetate | 1000 | 5000 | x | | 108-05-4 |
| Vinyl bromide | | | x | | 593-60-2 |
| Warfarin | 500/10,000 | 100 | | P001 | 81-81-2 |
| Warfarin sodium | 100/10,000 | | | | 129-06-6 |
| Xylenol | | 1000 | | | 1300-71-6 |
| Xylylene dichloride | 100/10,000 | | | | 28347-13-9 |
| Zinc | | 1000 | x | | 7440-66-6 |
| Zinc acetate | | 1000 | | | 557-34-6 |
| Zinc ammonium chloride | | 1000 | | | 52628-25-8 |
| Zinc ammonium chloride | | 1000 | | | 14639-97-5 |
| Zinc ammonium chloride | | 1000 | | | 14639-98-6 |
| Zinc borate | | 1000 | | | 1332-07-6 |
| Zinc bromide | | 1000 | | | 7699-45-8 |
| Zinc carbonate | | 1000 | | | 3486-35-9 |
| Zinc chloride | | 1000 | | | 7646-85-7 |
| Zinc cyanide | | 10 | | P121 | 557-21-1 |
| Zinc, dichloro(4,4-dimeth- yl-5(((methylamino)car- bonyl)oxy)imino)Pentane- nitrile)-(T-4) | 100/10,000 | | | | 58270-08-9 |
| Zinc fluoride | | 1000 | | | 7783-49-5 |
| Zinc formate | | 1000 | | | 557-41-5 |
| Zinc hydrosulfite | | 1000 | | | 7779-86-4 |
| Zinc nitrate | | 1000 | | | 7779-88-6 |
| Zinc phenolsulfonate | | 5000 | | | 127-82-2 |
| Zinc phosphide | 500 | 100 | | P122 | 1314-84-7 |
| Zinc silicofluoride | | 5000 | | | 16871-71-9 |
| Zinc sulfate | | 1000 | | | 7733-02-0 |
| Zineb | | | x | | 12122-67-7 |
| Zirconium nitrate | | 5000 | | | 13746-89-9 |
| Zirconium potassium fluoride | | 1000 | | | 16923-95-8 |
| Zirconium sulfate | | 5000 | | | 14644-61-2 |
| Zirconium tetrachloride | | 5000 | | | 10026-11-6 |

Appendix 3-2

Maximum Allowable Capacity of Containers And Portable Tanks

(29 CFR 1910.106(d)(2), Table H-12)

| Container Type | Flammable Liquids | | |
|----------------------------------|---------------------|---------------------|---------------------|
| | <i>IA</i> | <i>IB</i> | <i>IC</i> |
| Glass | | | |
| or approved plastic | 1 pt [0.47 L] | 1 qt [0.95 L] | 1 gal [3.79 L] |
| Metal (other than DOT drums) | 1 gal [3.79 L] | 5 gal [18.93 L] | 5 gal [18.93 L] |
| Safety cans | 2 gal [7.57 L] | 5 gal [18.93 L] | 5 gal [18.93 L] |
| Metal drums (DOT specifications) | 60 gal [227.12 L] | 60 gal [227.12 L] | 60 gal [227.12 L] |
| Approved portable tanks | 660 gal [2498.37 L] | 660 gal [2498.37 L] | 660 gal [2498.37 L] |

| Container Type | Combustible Liquids | |
|----------------------------------|---------------------|---------------------|
| | <i>II</i> | <i>II</i> |
| Glass | | |
| or approved plastic | 1 gal [3.79 L] | 1 gal [3.79 L] |
| Metal (other than DOT drums) | 5 gal [18.93 L] | 5 gal [18.93 L] |
| Safety cans | 5 gal [18.93 L] | 5 gal [18.93 L] |
| Metal drums (DOT specifications) | 60 gal [227.12 L] | 60 gal [227.12 L] |
| Approved portable tanks | 660 gal [2498.37 L] | 660 gal [2498.37 L] |

Appendix 3-3

Storage in Inside Rooms

(29 CFR 1910.106(d)(4), Table H-13)

| <i>Fire Protection¹ Provided</i> | <i>Fire Resistance</i> | <i>Maximum Size</i> | <i>Total Allowable Quantities² (gal/ft² floor area)</i> |
|---|----------------------------|---|---|
| Yes | 2 h | 500 ft ² [46.45 m ²] | 10 [37.85 L] |
| No | 2 h | 500 ft ² [46.45 m ²] | 4 [15.14 L] |
| Yes | 1 h | 150 ft ² [13.94 m ²] | 5 [18.93 L] |
| No | 1 h | 150 ft ² [13.94 m ²] | 2 [7.57 L] |

-
- ¹ Fire protection system will be sprinkler, water spray, or other approved method.
² If metric containers are being stored, use the nearest metric equivalent.

Appendix 3-4

Flammable/Combustible Materials

(29 CFR 1910.106(d)(5) and 1910.106(d)(6), Tables H-14 through H-17)

Indoor Container Storage

| Class Liquid | Storage Level | Protected Storage (Maximum per Pile) | Unprotected Storage (Minimum per Pile) |
|-----------------|-------------------------|---|---|
| A | Ground and upper floors | 2750 gal [10,409.88 L] (50) | 600 gal [2271.25 L] (12) |
| | Basement | Not permitted | Not permitted |
| B | Ground and upper floors | 5500 gal [20,819.77 L] (100) | 1375 gal [5204.94 L] (25) |
| | Basement | Not permitted | Not permitted |
| C | Ground and upper floors | 16,500 gal [62,459.30 L] (300) | 4125 gal [15,614.82 L] (25) |
| | Basement | Not permitted | Not permitted |
| II | Ground and upper floors | 16,500 gal [62,549.30 L] (300) | 4125 [15,614.82 L] (75) |
| | Basement | 5500 gal [20,819.77 L] (100) | Not permitted |
| II* | Ground and upper floors | 55,000 gal [20,8197.66 L] (1000) | 13,750 gal [52,049.42 L] (250) |
| | Basement | 8250 gal [31,229.65] (450) | Not permitted |

Numbers in parentheses indicate corresponding number of 55-gal [208.20 L] drums.

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gal-lonage permitted in that pile will be the smallest of the two or more separate maximum gal-lonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 8 ft [2.44 m] wide and side aisles at least 4 ft [1.22 m] wide. (Numbers in parentheses indicate corresponding number of 55-gal [208.20 L] drums.)

NOTE 3: Each pile shall be separated from the others by at least 4 ft [1.22 m].

Outdoor Container Storage

| Class | Maximum per pile (gal) [L] | Distance between piles (ft) [m] | Distance to property line that can be developed (ft) [m] | Distance to street, alley or public way (ft) [m] |
|-------|-------------------------------|------------------------------------|---|---|
| IA | 1100 [4163.95] | 5 [1.52] | 20 [6.10] | 10 [3.05] |
| IB | 2200 [8327.91] | 5 [1.52] | 20 [6.10] | 10 [3.05] |
| IC | 4400 [44,003.79] | 5 [1.52] | 20 [6.10] | 10 [3.05] |
| II | 8800 [33,311.63] | 5 [1.52] | 10 [3.05] | 5 [1.52] |
| III | 22,000 [83,279.06] | 5 [1.52] | 10 [3.05] | 5 [1.52] |

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12 ft [3.66 m] wide accessway to allow approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 3 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].

Indoor Portable Tank Storage

| Class Liquid | Storage Level | Protected Storage (Maximum per Pile) (gal) [L] | Unprotected Storage (Minimum per Pile) (gal) [L] |
|-----------------|-------------------------------------|--|--|
| IA | Ground and upper floors Basement | Not permitted Not permitted | Not permitted Not permitted |
| IB | Ground and upper floors Basement | 20,000 [75,708.24] Not permitted | 2000 [7570.82] Not permitted |
| IC | Ground and upper floors Basement | 40,000 [151,420.48] Not permitted | 5500 [20,820.32] Not permitted |
| II | Ground and upper floors Basement | 40,000 [151,420.48] 20,000 [75708.24] | 5500 [20,820.32] Not permitted |
| III | Ground and upper floors Basement | 60,000[227,124.72} 20,000 [75,708.24] | 22,000 [83,279.06] Not permitted |

NOTE 1: When one or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate maximum gallonages.

NOTE 2: Aisles will be provided so that no container is more than 12 ft [3.66 m] from an aisle. Main aisles will be at least 8 ft [2.44 m] wide and side aisles at least 4 ft [1.22 m] wide.

NOTE 3: Each pile shall be separated from each other by at least 4 ft [1.22 m].

Outdoor Portable Tank Storage

| Class | Maximum per pile (gal) [L] | Distance between piles (ft) [m] | Distance to property line that can be developed (ft) [m] | Distance to street, alley public way (ft) [m] |
|-------|-------------------------------|------------------------------------|---|--|
| IA | 2200 [8327.95] | 5 [1.52] | 20 [6.10] | 10 [3.05] |
| IB | 4400 [44,003.79] | 5 [1.52] | 20 [6.10] | 10 [3.05] |
| IC | 8800 [33,311.63] | 5 [1.52] | 20 [6.10] | 10 [3.05] |
| II | 17,600 [66,623.25] | 5 [1.52] | 10 [3.05] | 5 [1.52] |
| III | 44,000 [166,558.12] | 5 [1.52] | 10 [3.05] | 5 [1.52] |

NOTE 1: When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile will be the smallest of the two or more separate gallonages.

NOTE 2: Within 200 ft [60.96 m] of each container, there will be a 12 ft [3.66 m] wide accessway to allow approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 3 will be doubled.

NOTE 4: When total quantity stored does not exceed 50 percent of maximum per pile, the distance in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft [0.91 m].

Appendix 3-5

Potentially Incompatible Hazardous Materials

*(Law, Regulations, and Guidelines for Handling of Hazardous Waste, California Department of Health, February 1975
(40 CFR 264, Appendix V))*

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes to avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a *Group A* material with a *Group B* material may have the potential consequences as noted.

| Group 1-A | Group 1-B |
|--|--|
| Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery acid Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic | Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte, acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid |

Potential Consequences: Heat generation, violent reaction.

Appendix 3-5 (continued)

| Group 2-A | Group 2-B |
|---|-------------------------------|
| Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides | Any waste in Group 1-A or 1-B |

Potential Consequences: Fire or explosion, generation of flammable hydrogen gas.

| Group 3-A | Group 3-B |
|-------------------|---|
| Alcohols Water | Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO_2Cl_2 , SOCl_2 , PCl_3 , CH_3SiCl_3 Other water-reactive waste |

Potential Consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

| Group 4-A | Group-4-b |
|--|---|
| Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents | Concentrated Group 1-A or Group 1-B wastes Group 2-A wastes |

Potential Consequences: Fire or explosion, violent reaction.

Appendix 3-5 (continued)

| Group 5-A | Group 5-B |
|-------------------------------------|------------------|
| Spent cyanide and sulfide solutions | Group 1-B wastes |

Potential Consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

| Group 6-A | Group 6-B |
|--|---|
| Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers | Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes |

Potential Consequences: Fire, explosion, or violent reaction.

Appendix 3-6

Placarding Guidelines

The following table specifies placards that should be used for the transportation of *any quantity* of the listed hazardous material.

Hazardous Materials

| <i>Classed or Described As</i> | <i>Placards</i> |
|--------------------------------|-----------------|
| Class A Explosives | EXPLOSIVES A |
| Class B Explosives | EXPLOSIVES B |
| Poison A | POISON GAS |
| Flammable Solid | FLAMMABLE SOLID |

(NOTE: Any of the above substances that are dangerous when wet should also have the placard: DANGEROUS WHEN WET, along with their primary placard.)

The following table specifies placards that should be used for the transportation of 1000 lb [453.59 kg] or more of the listed hazardous materials.

Hazardous Materials

| <i>Classed or Described As</i> | <i>Placards</i> |
|---|------------------|
| Class C Explosives | FLAMMABLE |
| Nonflammable Gas | NONFLAMMABLE GAS |
| Nonflammable Gas (Chlorine) | CHLORINE |
| Nonflammable Gas (Fluorine) | POISON |
| Nonflammable Gas (Oxygen, pressurized liquid) | OXYGEN |
| Flammable Gas | FLAMMABLE GAS |
| Combustible Liquid | COMBUSTIBLE |
| Flammable Liquid | FLAMMABLE |
| Flammable Solid | FLAMMABLE SOLID |
| Oxidizer | OXIDIZER |
| Organic Peroxide | ORGANIC PEROXIDE |
| Poison B | POISON |
| Corrosive Material | CORROSIVE |
| Irritating Material | DANGEROUS |

Appendix 3-6 (continued)

1. Placards should be affixed on both sides, rear, and front of the motor vehicle.
2. Place placards clear of ladders, pipes, and tarps.
3. Placards should be at least 3 in. [7.62 cm] away from advertising and markings.
4. The DANGEROUS placards may be used when a motor vehicle contains two or more classes of hazardous materials requiring different placards. The DANGEROUS placard may be used in place of the separate placards for each class.
5. Portable tanks having a rated capacity of 1000 gal [3785.412 L] or more must be placarded.
6. Cargo tanks having any quantity of hazardous material must be placarded.

Section 4

Hazardous Waste Management

SECTION 4

HAZARDOUS WASTE MANAGEMENT

A. Applicability

This section applies to U.S. Army Corps of Engineers (USACE) facilities that generate, store, transport, treat, or dispose of any type of hazardous waste. Federal regulations establish different regulatory requirements based on the amount of hazardous waste generated.

This section and its associated evaluation checklists are more complex than other sections in this volume. Not all evaluation items will be applicable to a facility. Guidance is provided on the checklists to direct the evaluator to the regulations concerning the type of hazardous waste activities/facilities on the facility.

B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA), Subtitle C*, as amended. This law, Public Law (PL) 98-616 (42 U.S. Code (USC) 6921-6939b) establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. Specifically, *RCRA* prohibits the placement of bulk or noncontainerized hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the land disposal of specified wastes and disposal of hazardous waste through underground injection within 1/4 mi [0.40 km] of an underground source of drinking water.
- *The Federal Facilities Compliance Act (FFCA) of 1992*. This act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to the *RCRA* solid and hazardous waste laws and regulations. Additionally, it defines hazardous waste in relation to public vessels, expands the definition of mixed waste, addresses the issue of munitions, and discusses waste discharges to Federally owned treatment works (FOTWs).

C. State/Local Regulations

Many states have met the U.S. Environmental Protection Agency (USEPA) requirements in 40 CFR 271 and have been authorized to manage their own state programs. The *RCRA* encourages states to develop their own hazardous waste statutes and to operate regulatory programs. Many states have adopted the USEPA regulations by reference or have promulgated regulations that are

identical to the USEPA regulations, while other states have promulgated stricter regulations than the Federal RCRA. These differences between individual state regulations and the Federal program require that evaluators check the status of the state's authorization and then determine which regulations apply. Since the section worksheets are based exclusively on the requirements of the Federal RCRA/USEPA program, it is necessary to determine in what ways the applicable state program differs from the RCRA/USEPA program.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- ER 385-1-92, *Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities*. This regulation identifies the safety and occupational health documents and procedures required to be developed and implemented by USACE elements and their contractors responsible for executing HTRW activities.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve these objectives.

E. Key Compliance Requirements

- Generator Requirements - Responsibilities of Corps facilities are based on the amount of waste being generated in 1 mo. Typical wastes include solvents, paint, contaminated antifreeze or oil, and sludges. In some states, waste oil and other substances have been classified as a hazardous waste and therefore need to be included in the total amount of waste being generated. Within Federal regulations there are three classifications:
 1. A Conditionally Exempt Small Quantity Generator (CESQG) produces no more than 100 kg [220.46 lb] of hazardous waste or 1 kg [2.20 lb] of acutely hazardous waste in a 1 mo time period. They also do not accumulate onsite more than 1000 kg [2204.62 lb] of waste at any one time. When either the volume of waste produced in 1 mo exceeds 100 kg [220.46 lb] or more than 1000 kg [2204.62 lb] of waste has accumulated onsite, the facility is required to comply with the more stringent standards applicable to a Small Quantity Generator (SQG).
 2. An SQG produces between 100 [220.46 lb] and 1000 kg [2204.62 lb] of hazardous waste in a month. The waste cannot accumulate onsite for more than 180 days unless the waste is transported more than 200 mi

[321.87 km] to a treatment, storage, and disposal facility (TSDF). In that situation, the waste can accumulate for 270 days. But at no time is there to be more than 6000 kg [13,227.73 lb] of waste accumulated at the facility. When the volume of waste generated in 1 mo exceeds 1000 kg [2204.62 lb], the accumulation time onsite is exceeded, or more than 6000 kg [13,227.73 lb] of waste is onsite, the facility is required to comply with the standards for a Generator.

3. A Generator produces more than 1000 kg [2204.62 lb] of hazardous waste in a month.

(NOTE: Using water, which weighs approximately 8 lb/gal [3.63 kg/gal] as a basis of measurement, 100 kg [220.46 lb] would equal about 28 gal [105.99 L] [one-half of a 55-gal [208.20-L] drum], and 1000 kg [2204.62 lb] would equal about 273 gal [1036.15 L] (almost five, 55-gal [208.20-L] drums).)

Whether the facility is a CESQG, an SQG, or a Generator determines the type of records the facility is required to keep and design standards for storage areas. Small storage areas connected to generation points are often referred to as accumulation points.

Regardless of the amount of hazardous waste generated, every Corps facility is required to test or use prior knowledge of its solid waste to determine if it has hazardous characteristics. Every Corps facility must also store and/or accumulate hazardous waste in undamaged containers that are compatible with the waste and labeled to indicate their contents.

Comparison of RCRA Generator Requirements

| Requirement | CESQG | SQG | Generator |
|--|-------------------------------------|---|--|
| Identify HW | Yes | Yes | Yes |
| Quantity Limits | <or= 100 kg/mo [220.46 lb/mo] | 100 - 1000 kg/mo [220.46 - 2204.62 lb/mo] | >1000 kg/mo [2204.62 lb/mo] |
| Acute Waste Limits | <or= 1 kg/mo [2.20 lb/mo] | None | None |
| Management of Waste | State-approved or RCRA-permitted | RCRA-permitted facility | RCRA-permitted facility |
| USEPA ID No. | Not Required | Required | Required |
| RCRA Personnel Training | Not Required | Basic Training Required | Required |
| DOT Training | Required | Required | Required |
| Exception Report | Not Required | Required > 60 days | Required > 45 days |
| Biennial Report | Not Required | Required | Required |
| Onsite Accumulation Limits (without permit) | <or= 1000 kg [2204.62 lb] | <or= 6000kg [13227.73 lb] | Any quantity |
| Accumulation Time Limits (without permit) | None | <or= 180 days or <or= 270 days (> 200 mi [321.87 km]) | <or= 90 days + 30 days granted by the USEPA |
| Storage Requirements | None | Basic requirements with technical standards for containers or tanks | Full compliance with management of containers or tanks |
| Use Manifests | Yes | Yes | Yes |

- Transport Requirements - Containers of hazardous waste shipped offsite must be labeled to identify the waste and its hazard class.
- Accumulation Point Management - An accumulation point is an area in or near the workplace where hazardous waste is accumulated or stored before being turned in for disposal. Storage in these areas is temporary and the permissible length of time for accumulation depends on the size of generator the facility is.
- Satellite Accumulation Point Management - A satellite accumulation point is an area in which no more than 55 gal [208.20 L] of a hazardous waste or 1 qt [0.95 L] of acute hazardous waste is accumulated at or near the point of generation. The satellite accumulation point is under the control of one operator. When the 55-gal [208.20-L] limit is reached, the operator has 3 days to move the waste to a 90-day storage area or a permitted TSDF.

- **Permitted TSDF Requirements** - The operation of a TSDF is subject to regulation and permitting under Federal and state regulations. These regulations are both administrative as well as technical in nature. The administrative standards require that various plans be developed to ensure that emergencies can be dealt with, waste received is properly identified, and operating personnel are adequately trained to operate the facility and respond to emergencies. These administrative standards also include requirements that the facility be inspected routinely, records of operations are compiled and maintained, and reports of both routine and contingency operations are made to the applicable regulatory agency. The administrative standards also require that a plan for ceasing operations and closing the facility be developed, kept on-hand, and updated frequently.

The technical standards which are applicable to TSDFs fall into two classes: general standards which apply to all TSDFs and specific standards which apply to various types of facilities; specifically, container storage areas, tanks, containment buildings, surface impoundments, waste piles, land treatment facilities, incinerators, landfills, thermal treatment facilities, and chemical, physical, and biological treatment facilities.

Administrative and technical facility standards are applied to a particular facility through a *RCRA* permit issued to a facility. Existing facilities which have applied for a permit but not yet been issued a *RCRA* permit are considered to be in interim status if they applied for a part A and part B permit and can continue to operate if they comply with the *RCRA* mandated Interim Status Standards (ISS) of 40 CFR 265 (Interim status standards for owners and operators of hazardous waste TSDFs).

F. Key Compliance Definitions

These definitions were obtained from the regulations previously cited in this section.

- ***Aboveground Tank*** - a device that meets the definition of a tank in 40 CFR 260.10 and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface, and the entire surface area of the tank (including the bottom) can be visually inspected (40 CFR 260.10).
- ***Active Life*** - the period from the initial receipt of hazardous waste at the facility until the Regional Administrator receives certification of final closure (40 CFR 260.10).

- *Active Portion* - that portion of a facility where treatment, storage, or disposal operations are being, or have been, conducted and which is not a *closed portion* (40 CFR 260.10).
- *Acute Hazardous Waste* - any waste listed under 40 CFR 261.31 through 261.33(c) with a hazard code of *H*. These include USEPA hazardous waste numbers F020, F021, F022, F023, F026, and F027 (40 CFR 261.31 through 261.33).
- *Ancillary Equipment* - any device including, but not limited to piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of hazardous waste from its point of generation to a storage or treatment tank(s), between hazardous waste storage and treatment tanks to a point of disposal onsite or point of shipment offsite (40 CFR 260.10).
- *Aquifer* - a geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs (40 CFR 260.10).
- *Boiler* - an enclosed device using controlled flame combustion and having the following characteristics (40 CFR 260.10):
 1. physical provisions for recovering and exporting thermal energy in the form of steam, heated fluids, or heated gases
 2. the combustion chamber and primary energy recovery section(s) must be of integral design
 3. maintains a thermal energy recovery efficiency of at least 60 percent while in operation
 4. has been approved by the Administrator.
- *Certification* - a statement of professional opinion based upon knowledge and belief (40 CFR 260.10).
- *Characteristics of Hazardous Waste* - the characteristics of ignitability, corrosivity, reactivity, and toxicity that identify hazardous waste (40 CFR 261.20 through 261.24).
- *Closed Portion* - the portion of a facility that has been closed in accordance with the approved closure plan and all applicable closure requirements (40 CFR 260.10).
- *Component* - refers to either the tank itself or the ancillary equipment of the tank system (40 CFR 260.10).
- *Consignee* - the ultimate TSDF in a receiving country to which the hazardous waste will be sent (40 CFR 262.51).

- *Container* - any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 260.10).
- *Containment Building* - a hazardous waste management unit that is used to store or treat hazardous waste under 40 CFR 264.1100 through 264.1103 and 265.1100 through 1103 (40 CFR 260.10).
- *Contingency Plan* - a document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment (40 CFR 260.10).
- *Corrective Action Management Unit (CAMU)* - an area within a facility that is designated by the Regional Administrator under part 264 subpart S, for the purpose of implementing corrective action requirements under 264.101 and RCRA section 3008(h). A CAMU shall only be used for the management of remediation wastes pursuant to implementing such corrective action requirements at the facility (40 CFR 264.10).
- *Corrosion Expert* - a person who, by reason of knowledge of the physical sciences and the principles of engineering and mathematics, acquired by a professional education and related practical experiences, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be certified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification and licensing that includes education and experience in corrosion control and/or buried or submerged metal piping systems or tanks (40 CFR 260.10).
- *Designated Facility* - a hazardous waste TSDF that is identified on a manifest as the destination of a hazardous waste shipment. The facility must have an appropriate permit or interim status, or be regulated under specific recycling requirements (40 CFR 260.10).
- *Dike* - an embankment or ridge of either natural or manmade materials used to prevent the movement of liquids, sludges, solids, or other materials (40 CFR 260.10).
- *Discharge or Hazardous Waste Discharge* - the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water (40 CFR 260.10).

- *Disposal* - the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste, or any constituent thereof, may enter the environment, be emitted into the air, or discharged into any waters, including groundwaters (40 CFR 260.10).
- *Elementary Neutralization Unit* - a device used for neutralizing only those hazardous wastes that exhibit corrosivity (as defined in 40 CFR 261.22), or are listed in Subpart D of 40 CFR 261 only because of corrosivity, and meet the definition of *tank*, *tank system container*, *transport vehicle*, or *vessel* in 40 CFR 261.10 (40 CFR 260.10).
- *EPA Acknowledgement of Consent* - the cable sent to the USEPA from the U.S. Embassy in a receiving country that acknowledges the written consent of the receiving country to accept the hazardous waste and describes the terms and conditions of the receiving country's consent to the shipment (40 CFR 262.51).
- *EPA Hazardous Waste Number* - the number assigned by the USEPA to each hazardous waste listed in 40 CFR 261, Subpart D and to each characteristic identified in 40 CFR 261, Subpart C (40 CFR 260.10).
- *EPA Identification Number* - the number assigned by the USEPA to each generator, transporter, and TSDF (40 CFR 260.10).
- *Existing Hazardous Waste Management (HWM) Facility or Existing Facility* - a facility that was in operation, or for which construction commenced, on or before 19 November 1980 (40 CFR 260.10).
- *Existing Portion* - the land surface area of an existing waste management unit, included in the original Part A permit application, on which wastes have been placed before the issuance of a permit (40 CFR 260.10).
- *Existing Tank System or Existing Component* - a tank system or component that is used for the storage or treatment of hazardous waste and that is in operation, or for which installation has commenced, on or before 14 July 1986. Installations are considered to be commenced if the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system and if either (40 CFR 260.20):
 1. a continuous onsite physical construction of the site or installation program has begun
 2. the owner or operator has entered into contractual obligations that cannot be canceled or modified without substantial loss for physical construction of the site or installation of the tank system to be completed within a reasonable time.

- *Facility* - all contiguous land and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combination of them) (40 CFR 260.10).
- *Final Closure* - the closure of all hazardous waste management units at the facility in accordance with all applicable closure requirements so that hazardous waste management activities under 40 CFR 264 and 265 are no longer conducted at the facility unless subject to the provisions of 262.34 (40 CFR 260.10).
- *Food-Chain Crops* - tobacco, crops grown for human consumption, and crops grown for feeding animals whose byproducts are consumed by humans (40 CFR 260.10).
- *Free Liquids* - liquids that readily separate from the solid portion of a waste under ambient temperature and pressure (40 CFR 260.10).
- *Freeboard* - the vertical distance between the top of a tank or surface impoundment dike and the surface of the waste contained within it (40 CFR 260.10).
- *Generator* - any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR 261, or whose act first causes a hazardous waste to become subject to regulation (40 CFR 260.10). (NOTE: This typically refers to an installation producing hazardous waste in quantities greater than 1000 kg/mo [2204.62 lb/mo].)
- *Good Management Practice (GMP)* - schedules of activities, prohibitions of practices, maintenance procedures, and other management procedures designed to prevent or reduce hazards to the environment.
- *Groundwater* - water below the land surface in a zone of saturation (40 CFR 260.10).
- *Halogenated Organic Compounds (HOC)* - those compounds having a carbon-halogen bond (40 CFR 268.2).
- *Hazardous Waste* - a solid waste identified as a characteristic or listed hazardous waste in 40 CFR 261.3 (40 CFR 260.10).
- *Hazardous Waste Constituent* - a constituent that causes a hazardous waste to be listed in 40 CFR 261, Subpart D (lists of hazardous wastes from nonspecific

and specific sources, and listed hazardous wastes), or a constituent listed in the table of maximum concentrations of contaminants for the toxicity characteristic (40 CFR 260.10).

- *Hazardous Waste Management Unit* - a contiguous area of land on or in which hazardous waste is placed, or the largest area in which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples are a surface impoundment, waste pile, treatment area, landfill cell, incinerator, tank and its associated piping and underlying containment system, and container storage area. A container alone does not constitute a unit; the unit includes containers and the land or pad upon which they are placed (40 CFR 260.10).
- *HTRW Activities* - those activities undertaken for the USEPA Superfund program, Defense Environmental Restoration Program (DERP), Formerly Used Defense Sites (FUDS), and Installation Restoration Program (IRP) sites at active DOD facilities, HTRW actions associated with Civil Works projects, and any other mission or nonmission work performed at HTRW sites.
- *Incinerator* - an enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace (40 CFR 260.10).
- *Incompatible Waste* - a hazardous waste that is unsuitable for (40 CFR 260.10):
 1. placement in a particular device or facility because it may cause corrosion or decay of containment materials (e.g., container liners or tank walls)
 2. co-mingling with another waste or material under uncontrolled conditions because the co-mingling conditions produce heat or pressure, fire or explosion, violent reaction, toxic dusts, mists, fumes, gases, or flammable fumes or gases.
- *Individual Generation Site* - the contiguous site at or on which one or more hazardous wastes are generated. An individual generation site, such as a large manufacturing plant, may have one or more sources of hazardous waste, but is considered a single or individual generation site if the site or property is contiguous (40 CFR 260.10).
- *Industrial Furnace* - any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame devices to accomplish recovery of materials or energy: cement kilns; lime kilns; aggregate kilns; phosphate kilns; coke ovens; blast furnaces; smelting, melting and refining furnaces; titanium dioxide chloride process oxidation reactors; methane reforming furnaces; pulping liquor recovery furnaces; combustion devices used in the recovery of sulfur values from spent sulfuric acid; halogen acid furnaces; and other devices designated by the Administrator (40 CFR 260.10).

- *Inground Tank* - a device meeting the definition of *tank* in 40 CFR 260.10 whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of that external surface area of the tank that is in the ground (40 CFR 260.10).
- *Injection well* - a well into which fluids are injected (40 CFR 260.10).
- *Inner Liner* - a continuous layer of material, placed inside a tank or container, that protects the construction materials of the tank or container from the contained waste or reagents used to treat the waste (40 CFR 260.10).
- *Installation Inspector* - a person who, by means of his/her knowledge of the physical sciences and the principles of engineering, acquired by a professional education and related practical experience, is qualified to supervise the installation of tank systems (40 CFR 260.10).
- *International Shipment* - the transportation of hazardous waste into or out of the jurisdiction of the United States (40 CFR 260.10).
- *Land Disposal* - includes, but is not limited to, any placement of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, underground mine, or cave, or placement in a concrete vault or bunker intended for disposal purposes (40 CFR 268.2).
- *Land Treatment Facility* - a facility or part of a facility at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure (40 CFR 260.10).
- *Landfill* - a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt bed formation, an underground mine, or a cave (40 CFR 260.10).
- *Landfill Cell* - a discrete volume of a hazardous waste landfill that uses a liner to provide isolation of wastes from adjacent cells or wastes (e.g., trenches and pits) (40 CFR 260.10).
- *Large Quantity Generator* - see *Generator*.
- *Leachate* - any liquid, including any suspended components in the liquid, that has percolated through or drained from hazardous waste (40 CFR 260.10).
- *Leak Detection System* - a system capable of detecting the failure of either the primary or secondary containment structure or the presence of a release of hazardous waste or accumulated liquid in the secondary structure. Such a

system must employ operational controls (i.e., daily visible containment for releases into the secondary containment system of aboveground tanks) or consist of an interstitial monitoring device designed to continuously and automatically detect the failure of the primary or secondary containment structure or the presence of a release of hazardous waste into the secondary containment structure (40 CFR 260.10).

- *Liner* - a continuous layer of natural or manmade materials, beneath or on the sides of a surface impoundment, landfill, or landfill cell, that restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate (40 CFR 260.10).
- *Management or Hazardous Waste Management* - the systematic control of the collection, source separation, storage, transportation, processing, treatment, recovery, and disposal of hazardous waste (40 CFR 260.10).
- *Manifest* - the shipping document originated with and signed by the Generator, containing the information required by 40 CFR 262, Subpart B (40 CFR 260.10).
- *Manifest Document Number* - the USEPA 12-digit number assigned to the manifest of the generator plus a unique 5-digit number assigned to the manifest by the generator for recording and reporting purposes (40 CFR 260.10).
- *Miscellaneous Unit* - a hazardous waste management unit where hazardous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, underground injection well with appropriate technical standards under 40 CFR 146, containment building, or unit eligible for a research development and demonstration permit under 40 CFR 270.65 (40 CFR 260.10).
- *Movement* - hazardous waste transported to a facility in an individual vehicle (40 CFR 260.10).
- *New Hazardous Waste Management Facility* - a facility that began operation, or for which construction commenced, after 21 October 1976 (40 CFR 260.10).
- *New Tank System or New Component System* - a tank system or component used for the storage and treatment of hazardous waste and for which installation has commenced after 14 July 1986; however, for the purposes of 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after 14 July 1986 (see also *existing tank system*) (40 CFR 260.10).
- *Nonwastewaters* - wastes that do not meet the criteria for wastewaters (40 CFR 268.2).

- *Onground Tank* - a device that meets the definition of *tank* in 40 CFR 260.10 and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visibly inspected (40 CFR 260.10).
- *Onsite* - the same or geographically continuous property that may be divided by a public right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection and access is by crossing as opposed to going along the right-of-way (40 CFR 260.10).
- *Open Burning* - the combustion of any material without the following characteristics (40 CFR 260.10):
 1. control of combustion air to maintain adequate temperature for efficient combustion
 2. containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion
 3. control of emission of the gaseous combustion products.
- *Partial Closure* - the closure of a hazardous waste management unit in accordance with the applicable closure requirements of 40 CFR 264 and 265 at a facility that contains other active hazardous waste management units. For example, partial closure may include the closure of a tank (including its associated piping and underlying containment systems), while other units of the same facility continue to operate (40 CFR 260.10).
- *Pile* - any noncontainerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage and that is not a containment building (40 CFR 260.10).
- *Point Source* - any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture (40 CFR 260.10).
- *Primary Exporter* - any person who is required to originate (40 CFR 262.51):
 1. the manifest for a shipment of hazardous waste in accordance with 40 CFR 262, Subpart B, or an equivalent state provision, that specifies a TSDF in a receiving country as the facility to which the hazardous waste will be sent
 2. any intermediate arranging for export.
- *Publicly Owned Treatment Works (POTW)* - any device or system, used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature, that is owned by a *state* or *municipality* (as

defined by Section 502(4) of the *Clean Water Act (CWA)*). This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment (40 CFR 260.10).

- *Pump Operating Level* - a liquid level proposed by the owner or operator and approved by the Regional Administrator based on pump activation level, sump dimensions, and level that avoids backup into the drainage layer and minimizes head in the sump (40 CFR 264.226(d)(3)).
- *Qualified Groundwater Scientist* - a scientist or engineer who has received a baccalaureate or postgraduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields, as may be demonstrated by state registration, professional certification, or completion of accredited university courses that enable that individual to make sound professional judgements regarding groundwater monitoring and contaminant fate and transport (40 CFR 260.10).
- *Receiving Country* - a foreign country to which a hazardous waste is sent for the purpose of treatment, storage, or disposal (except for short-term storage incidental to transportation) (40 CFR 262.51).
- *Replacement Unit* - a landfill, surface impoundment, or waste pile unit (40 CFR 260.10):
 1. from which all or substantially all of the waste is removed
 2. that is subsequently reused to treat, store, or dispose of hazardous waste. This does not apply to a unit from which waste is removed during closure if the subsequent reuse solely involves the disposal of waste from that unit and other closing units or corrective action areas at the facility, in accordance with an approved closure plan or USEPA- or state-approved corrective action.
- *Representative Sample* - a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) that can be expected to exhibit the average properties of the universe or whole (40 CFR 260.10).
- *Restricted Wastes* - those categories of hazardous wastes that are prohibited from land disposal either by regulation or by statute, in other words, a hazardous waste that is restricted no later than the date of the deadline established in *RCRA* Section 3004 (40 CFR 268).
- *Runoff* - any rainwater, leachate, or other liquid that drains over land from any part of a facility (40 CFR 260.10).
- *Run-on* - any rainwater, leachate, or other liquid that drains over land onto any part of a facility (40 CFR 260.10).

- *Sludge* - any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility exclusive of the treated effluent from a wastewater treatment plant (40 CFR 260.10).
- *Small Quantity Generator (SQG)* - a generator who generates less than 1000 kg [2204.62 lb] of hazardous waste in a calendar month, but more than 100 kg [220.46 lb] (40 CFR 260.10).
- *Storage* - the holding of hazardous wastes for a temporary period, at the end of which the hazardous wastes are treated, disposed of, or stored elsewhere (40 CFR 260.10).
- *Sump* - any pit or reservoir that meets the definition of *tank* and those troughs/trenches connected to it that serve to collect hazardous waste for transport to hazardous waste TSDFs; except that as used in the landfill, surface impoundment, and waste pile rules, *sump* means any lined pit or reservoir that serves to collect liquids drained from a leachate collection and removal system, or leak detection system, for subsequent removal from the system (40 CFR 260.10).
- *Surface Impoundment* - a facility, or part of a facility, that is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials, designed to hold an accumulation of liquid wastes, or wastes containing free liquids, and that is not an injection well (40 CFR 260.10).
- *Tank* - a stationary device, designed to contain an accumulation of hazardous waste, that is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) that provide structural support (40 CFR 260.10).
- *Tank System* - a hazardous waste storage or treatment tank and its associated ancillary equipment and containment system (40 CFR 260.10).
- *Thermal Treatment* - the treatment of hazardous waste in a device that uses elevated temperature as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste (40 CFR 260.10).
- *Transfer Facility* - any transportation-related facility, including loading docks, parking areas, storage areas, and other similar areas, where shipments of hazardous wastes are held during the normal course of transportation (40 CFR 260.10).
- *Transit Country* - any foreign country, other than a receiving country, through which a hazardous waste is transported (40 CFR 260.10).

- *Transport Vehicle* - a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle (40 CFR 260.10).
- *Transporter* - a person engaged in the offsite transportation of hazardous wastes by air, rail, highway, or water (40 CFR 260.10).
- *Treatability Study* - a study in which a hazardous waste is subjected to a treatment process to determine (40 CFR 260.10):
 1. whether the waste is amenable to the treatment process
 2. what pretreatment (if any) is required
 3. what optimal process conditions are needed to achieve the desired treatment
 4. how efficient a treatment process is for a specific waste or wastes
 5. what the characteristics and volumes of residuals are from a particular treatment process.

Also included in this definition for the purpose of 40 CFR 261.4(e) and (f) exemptions are liner compatibility, corrosion, and other material compatibility studies and toxicological and health effects studies. A *treatability study* is not a means to commercially treat or dispose of hazardous waste.

- *Treatment* - any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, recover energy or material resources from the waste, or render such waste: nonhazardous or less hazardous; safer to transport, store, or dispose of; amenable for recovery or storage; or reduced in volume (40 CFR 260.10).
- *Treatment Zone* - a soil area of the unsaturated zone of a land treatment unit within which hazardous constituents are degraded, transformed, or immobilized (40 CFR 260.10).
- *Underground Injection* - the subsurface emplacement of fluids through a bored, drilled, driven, or dug well, where the depth of the dug well is greater than than the largest surface dimension (40 CFR 260.10).
- *Underground Tank* - a device meeting the definition of *tank* in 40 CFR 260.10, whose entire surface area is totally below the surface and covered by the ground (40 CFR 260.10).

- *Unfit-for-Use Tank System* - a tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment (40 CFR 260.10).
- *Unsaturated Zone or Zone of Aeration* - the zone between the land surface and the water table (40 CFR 260.10).
- *United States* - the 50 states, District of Columbia, Commonwealth of Puerto Rico, U.S. Virgin Islands, Guam, American Samoa, and Commonwealth of the Northern Mariana Islands (40 CFR 260.10).
- *Uppermost Aquifer* - the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary (40 CFR 260.10).
- *Wastewater Treatment Unit* - a device that is part of a wastewater treatment facility, subject to regulation under Section 402 or 307 of the CWA, and that receives and treats or stores an influent wastewater that is a hazardous waste (as defined in 40 CFR 261.3), generates and accumulates a wastewater treatment sludge that is a hazardous waste, or treats or stores a wastewater treatment sludge, and meets the definition of *tank* or *tank system* (40 CFR 260.10).
- *Wastewaters* - wastes that contain less than 1 percent, by weight, total organic compounds (40 CFR 268.2).
- *Zone of Engineering Control* - an area under the control of the owner/operator that, upon detection of a hazardous waste release, can be readily cleaned up before the release of hazardous waste or hazardous constituents to groundwater or surface water (40 CFR 260.10).

HAZARDOUS WASTE MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|---|--|--|
| All Facilities | 4-1 through 4-4 | (1)(2)(3)(10)(13)(15)(16)(17) |
| All Sizes of Generators | | |
| General | 4-5 through 4-11 | (1)(5)(6)(7)(8)(10)(13)(15)(16)(17) |
| Personnel Training Requirements | 4-12 and 4-13 | (3)(5) |
| Satellite Accumulation Points | 4-14 | (5)(15)(16) |
| Conditionally Exempt Small Quantity Generator (CESQG) | 4-15 through 4-18 | (5)(15)(16)(17) |
| Small Quantity Generator (SQGs) | | |
| General | 4-19 through 4-22 | (15)(16)(17) |
| Containers | 4-23 through 4-28 | (15)(16)(17) |
| Container Storage Areas | 4-29 through 4-31 | (15)(16)(17) |
| Tank System Storage | 4-32 through 4-34 | (2)(5)(7)(8)(15)(16)(17) |
| Generators | | |
| General | 4-35 through 4-42 | (5)(7)(8)(10)(13)(15)(16)(17) |
| Containers | 4-43 through 4-48 | (8)(15)(16)(17) |
| Container Storage Areas | 4-49 through 4-51 | (8)(15)(16)(17) |
| Tank System Storage | 4-52 through 4-62 | (2)(5)(7)(8)(10)(13)(15)(16)(17) |
| Personnel Training Requirements | 4-63 and 4-64 | (3)(5) |
| Containment Buildings | 4-65 through 4-71 | (2)(5)(7)(8)(10)(15)(16)(17) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resource Coordinator
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a POC for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

HAZARDOUS WASTE MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS (continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|---|---------------------------------|--|
| Transportation | 4-72 through 4-76 | (1)(2)(5)(8)(15)(16)(17) |
| All Treatment, Storage, and Disposal Facilities (TSDFs): | | |
| General | 4-77 through 4-86 | (15)(16)(17) |
| Personnel Training Requirements | 4-87 and 4-88 | (3)(5) |
| Containers | 4-89 through 4-94 | (15)(16)(17) |
| Container Storage Areas | 4-95 through 4-97 | (15)(16)(17) |
| Tank Systems | 4-98 through 4-108 | (2)(5)(7)(8)(10)(15)(16)(17) |
| Containment Buildings | 4-109 through 4-115 | (2)(5)(7)(8)(13)(15)(16)(17) |
| Emissions from Process Vents | 4-116 through 4-118 | (15)(16)(17) |
| Air Emission Standards for Equipment Leaks | 4-119 through 4-126 | (15)(16)(17) |
| Documentation Requirements | 4-127 through 4-138 | (5)(15)(16)(17) |
| Closure | 4-139 through 4-143 | (13)(15)(16)(17) |

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HAZARDOUS WASTE MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

(continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|---------------------------------------|---------------------------------|--|
| Permitted TSDFs | 4-144 through 4-156 | (5)(8)(15)(16)(17) |
| Interim Status TSDFs | 4-157 through 4-164 | (15)(16)(17) |
| Permitted Incinerators | 4-165 through 4-168 | (5)(15)(16)(17) |
| Interim Status Incinerators | 4-169 through 4-173 | (5)(15)(16)(17) |
| Land Disposal of Restricted Wastes | 4-174 through 4-183 | (5)(15)(16)(17) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resource Coordinator
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
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HAZARDOUS WASTE MANAGEMENT

Records to Review

Generator (including TSDFs if they are also generators):

- Notification (USEPA ID No.)
- Hazardous waste manifests
- Manifest exception reports
- Biennial reports
- Delistings
- Speculative accumulation records
- Land disposal restriction certifications
- Employee training documentation
- Hazardous waste tank integrity assessments
- Contingency plan (large quantity generators only)
- Notifications of hazardous waste oil fuel marketing or blending activity

In addition to the above, TSDFs would require:

- Unmanifested waste reports
- Facility audit reports (Inspection log)
- Waste analysis plan(s)
- Operating record
- Groundwater monitoring records and annual reports (where required)
- Facility biennial reports
- Closure/postclosure plans
- Closure/postclosure notices (where applicable)
- Other documents as required by the permit

Physical Features to Inspect

- Disposal sites
- Accumulations points
- Incinerators
- Vehicles used for transport
- Storage facilities (including drums)
- Surface impoundments

People to Interview

- Natural Resources Manager (Division, District)
- Engineering (Division, District)
- Environmental Compliance Coordinator (ECC)
- Safety and Occupational Health Office (Division, District)
- Operations (District)
- Planning
- Project Resource Manager
- Facility Managers
- Lab Manager

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. This chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 4-1 through 4-10 | 4-1 through 4-10 |
| no match | 4-11 through 4-13 |
| 4-11 through 4-39 | 4-14 through 4-42 |
| no match | 4-43 |
| 4-40 through 4-82 | 4-44 through 4-86 |
| no match | 4-87 through 4-89 |
| 4-83 through 4-176 | 4-90 through 4-183 |

| | | | |
|---------------------------------|---|--------------|---------------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

| COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT USACE ERGO | |
|--|---|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>ALL FACILITIES</p> <p>4-1. Determine actions or changes since previous review of hazardous waste (GMP).</p> <p>...</p> <p>4-2. Copies of all relevant Federal, Corps, state, and local regulations and guidance documents on hazardous waste should be available at the facility (GMP).</p> <p>...</p> | <p>Determine, by reviewing a copy of the previous report, if noncompliance issues have been resolved. (1)(2)(3)</p> <p>...</p> <p>Verify that copies of the following regulations are available and kept current: (1)(2)(3)</p> <ul style="list-style-type: none"> - 40 CFR 261, <i>Identification and Listing of Hazardous Waste.</i> - 40 CFR 262, <i>Standards Applicable to Generators of Hazardous Waste.</i> - 40 CFR 263, <i>Standards Applicable to Transporters of Hazardous Waste.</i> - 40 CFR 264, <i>Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.</i> - 40 CFR 265, <i>Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.</i> - 40 CFR 266, <i>Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities.</i> - 40 CFR 268, <i>Land Disposal Restriction.</i> - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - <i>Federal Facilities Compliance Act (FFCA).</i> - Applicable state hazardous waste management regulations. <p>Determine if the facility environmental staff is familiar and knowledgeable of regulatory requirements. (1)(2)(3)</p> <p>(NOTE: States may obtain from the USEPA partial authorization to operate the RCRA program provided that regulations at least as stringent as USEPA regulations have been passed and an agreement has been signed with the USEPA.)</p> <p>...</p> |

DIVISION: (1) Natural Resources Management (2) Engineering (3) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
HAZARDOUS WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>4-3. Facilities are required to comply with state and local hazardous waste regulations (<i>FFCA</i>, Section 102(a)(3) and ER 1165-2-116, para 3).</p> <p>...</p> <p>4-4. Corps material resources should be procured and used in a way that minimizes waste production (GMP).</p> <p>...</p> | <p>Verify that the facility is complying with state and local hazardous waste requirements. (1)(2)(3)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (1)(2)(3)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - additional manifesting requirements - more frequent reporting requirements - transportation - identification of special waste or waste categories - regulation of specific substances as hazardous waste, such as medical, pathological, and infectious waste, used oil, explosives, and used batteries - SQG and CESQG requirements - disposal requirements - construction and operation of storage and disposal facilities - satellite accumulation point requirements - container marking/labeling requirements.) <p>...</p> <p>Verify that the facility has a plan to recycle, reuse material, and substitute less hazardous products to the greatest extent possible. (1)(10)(13)(15)(16)(17)</p> <p>...</p> |

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**COMPLIANCE CATEGORY:
HAZARDOUS WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>ALL SIZES OF GENERATORS</p> <p>General</p> <p>4-5. Facilities that generate solid wastes must determine if the wastes are hazardous wastes (40 CFR 261.3, 261.4(b), 262.11a, and 261.24).</p> | <p>(NOTE: Expired materials that cannot be excessed and unidentified waste materials may have to be disposed of as hazardous waste depending on their constituents. Determining if a waste is a hazardous waste can be done through one of the following:</p> <ul style="list-style-type: none"> - knowledge of all the constituents of the waste - laboratory analysis.) <p>(NOTE: Wastes that are on the facility as a result of midnight dumping must also be identified as to whether they are hazardous waste or a solid waste.)</p> <p>Discuss with staff how wastes generated on the facility were identified and classified. (5)(6)(7)(8)(16)(17)</p> <p>Determine if the facility followed USEPA criteria for identifying the characteristics of hazardous waste and USEPA listed wastes in 40 CFR 261. (5)(6)(7)(8)(16)(17)</p> <p>Determine if the facility generates, transports, treats, stores, or disposes of any hazardous waste (see Appendix 4-1 for guidance) and in what quantity. If so, go to the appropriate generator section. (5)(6)(7)(8)(16)(17)</p> <p>(NOTE: The following solid wastes are not considered hazardous wastes:</p> <ul style="list-style-type: none"> - household waste - fly ash waste, bottom ash waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels, except for facilities that burn hazardous waste - drilling fluids, produced waters, and other wastes affiliated with the explorations, development, or production of crude oil, natural gas, or geothermal energy - solid waste that consists of discarded arsenical-treated wood or wood products that fail the test for Toxicity Characteristics for Hazardous Waste Codes 0004 through 0017, and that is not a hazardous waste for any other reason, if the waste is generated by people who utilize the arsenical-treated wood and wood products for those materials' intended end use |

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| COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT USACE ERGO | |
|---|---|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| 4-5. (continued) | <ul style="list-style-type: none"> - petroleum-contaminated media and debris that fail the test for Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) and are required to meet the corrective action regulations under 40 CFR 280 (see <i>UST Management</i>) - used chlorofluorocarbon (CFC) refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration, and commercial and industrial air conditioning and refrigeration systems that use CFCs as the heat transfer fluid in a refrigeration cycle, provided that the refrigerant is reclaimed for further use - used oil containing less than 1000 ppm halogens - nonterne-plated, used oil filters that are not mixed with a listed hazardous waste if these oil filters have been gravity hot-drained using one of the following methods: <ul style="list-style-type: none"> - puncturing the filter antidrain-back valve or the filter dome end and hot-draining - hot-draining and crushing - dismantling and hot-draining - any other equivalent hot-draining method that will remove used oil.) <p>Verify that wastes are tested for ignitability, corrosivity, and reactivity.</p> <p>Verify that wastes are tested for toxicity characteristics or are previously identified as toxic (See Appendix 4-2). (1)(5)(6)(7)(8)(16)(17)</p> <p>Determine if wastes contain contaminants in greater concentrations than the Toxicity Characteristics listed in Appendix 4-3. (1)(5)(6)(7)(8)(16)(17)</p> <p>Verify that wastes that exceed toxicity characteristics are handled as hazardous wastes. (1)(5)(6)(7)(8)(16)(17)</p> <p>Verify that all data, including quality assurance data, is maintained and kept available for reference or inspection. (1)(5)(6)(7)(8)(16)(17)</p> <p>...</p> |
| 4-6. Facilities that generate hazardous wastes must test their wastes or use prior knowledge to determine if they are restricted from land disposal (40 CFR 268.7). | <p>Determine if the generator tests for restricted wastes. (16)(17)</p> <p>Determine, by reviewing test results, if the facility generates restricted wastes (see Appendix 4-4). (16)(17)</p> <p>(NOTE: Use also the <i>Land Disposal</i> section checklist items for generators of these wastes in addition to the checklist items in this section.)</p> <p>...</p> |
| 4-7. A facility must not offer its hazardous waste to transporters or to TSDFs that have not received a USEPA ID No. (40 CFR 262.12 (c)). | <p>Examine records pertaining to disposal contract awards, and verify that all transporters of hazardous wastes or TSDFs have a USEPA ID No. (5)(10)(13)(15)(16)(17)</p> |

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**COMPLIANCE CATEGORY:
HAZARDOUS WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>4-8. All generators of hazardous waste must submit a biennial report to the Regional Administrator by 1 March of even numbered years (40 CFR 262.40(b) and 262.41(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that the biennial report (USEPA Form 8700-13A) was completed and submitted in a timely manner. (5)(10)(13)(15)(16)(17)</p> <p>Verify that copies are kept for 3 yr. (5)(10)(13)(15)(16)(17)</p> <p>(NOTE: Reporting for exports of hazardous waste is not required.)</p> <p>(NOTE: This does not apply to CESQG.)</p> <p style="text-align: center;">...</p> |
| <p>4-9. Facilities that are generators are required to use manifests and maintain records (40 CFR 262.40(a), 262.40(b), and 262.40(d)).</p> <p style="text-align: center;">...</p> | <p>Verify that copies of manifests are kept for 3 yr. (5)(10)(13)(15)(16)(17)</p> <p>(NOTE: Periods of retention for manifests may be extended automatically during the course of any unresolved enforcement action.)</p> <p style="text-align: center;">...</p> |
| <p>4-10. Generators are required to keep records of waste analyses, tests, and waste determinations (40 CFR 262.40(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that appropriate records are kept for at least 3 yr from the date the waste was last sent to an onsite or offsite TSDF. (5)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-11. Areas where containers of hazardous waste are stored at generators should have secondary containment (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that the areas where containers of hazardous waste are stored have secondary containment. (16)(17)</p> <p style="text-align: center;">...</p> |

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| COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| Personnel Training Requirements 4-12. All facility personnel who handle hazardous waste should meet certain training requirements (GMP). <p>...</p> 4-13. Training records should be maintained for all facility staff who manage hazardous waste (GMP). <p>...</p> | <p>Verify that the training program is directed by a person trained in hazardous waste management procedures. (3)(5)</p> <p>Verify that the training program includes the following: (3)(5)</p> <ul style="list-style-type: none"> - contingency plan implementation - key parameters for automatic waste feed cut-off system - procedures for using, inspecting, and repairing emergency and monitoring equipment - operation of communications and alarm systems - response to fire or explosion - response to leaks or spills - waste turn-in procedures - identification of hazardous wastes - container use, marking, labeling, and on-facility transportation - manifesting and off-facility transportation - accumulation point management - personnel health and safety and fire safety - facility shutdown procedures. <p>Verify that new employee training is completed within 6 mo of employment. (3)(5)</p> <p>Verify that an annual review of initial training is provided. (3)(5)</p> <p>Verify that employees do not work unsupervised until training is completed. (3)(5)</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (3)(5)</p> <p>...</p> <p>Examine training records and verify they include the following: (3)(5)</p> <ul style="list-style-type: none"> - job title and description for each employee by name - written description of how much training each position will obtain - documentation of training received by name. <p>Determine if training records are retained for 3 yr after employment at the facility. (3)(5)</p> <p>Verify that records are transferred with employees. (3)(5)</p> <p>...</p> |

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**COMPLIANCE CATEGORY:
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>Satellite Accumulation Points</p> <p>4-14. All generators may accumulate as much as 55 gal [208.20 L] of hazardous waste or 1 qt [0.95 L] of acute hazardous waste in containers at or near any point of initial generation without complying with the requirements for onsite storage if specific standards are met (40 CFR 262.34(c)).</p> <p>...</p> | <p>(NOTE: This type of storage is often referred to as a <i>satellite accumulation point</i>.)</p> <p>Verify that the satellite accumulation point is near the point of generation and is under the control of the operator of the waste-generating process. (5)(16)(17)</p> <p>Verify that the containers are in good condition, compatible with the waste stored in them, and kept closed except when waste is being added or removed. (5)(16)(17)</p> <p>Verify that the containers are marked HAZARDOUS WASTE or with other appropriate identification. (5)(16)(17)</p> <p>(NOTE: See Appendices 4-1 and 4-5 for a guidance list of hazardous and acute wastes.)</p> <p>Verify, by interviewing the shop managers, that when waste is accumulated in excess of quantity limitations, the following actions are taken: (5)(16)(17)</p> <ul style="list-style-type: none"> - the excess container is marked with the date the excess amount began accumulating - the waste is transferred to a 90-day or permitted storage area within 3 days. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>CONDITIONALLY EXEMPT SMALL QUANTITY GENERATORS (CESQG)</p> <p>4-15. Generators of no more than 100 kg/mo [220.46 lb/mo] of hazardous waste may qualify as CESQGs when they meet specific requirements (40 CFR 261.5).</p> | <p>Verify that the following quantity and storage limitations are met: (5)(16)(17)</p> <ul style="list-style-type: none"> - no more than 100 kg [220.46 lb] of hazardous waste is generated in a calendar month - total onsite accumulation does not exceed more than 1000 kg [2204.62 lb] of hazardous waste - no more than 1 kg [2.2 lb] of acute hazardous waste (see Appendix 4-5) is generated in a calendar month - no more than a total of 100 kg [220.46 lb] of any residue or contaminated soil, waste, or other debris resulting from the cleanup of any acute wastes is generated in a calendar month. <p>Verify that wastes are either treated or disposed of in an onsite facility or delivered to an offsite TSDF, of which are one of the following: (5)(16)(17)</p> <ul style="list-style-type: none"> - permitted - in interim status - authorized to manage hazardous waste by a state with an approved hazardous waste management program - permitted, licensed, or registered by a state to manage municipal or industrial solid waste - a facility which does one of the following: <ul style="list-style-type: none"> - beneficially uses or reuses, or legitimately recycles or reclaims its waste - treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation. <p>(NOTE: If a hazardous waste generator meets the requirements for being a CESQG, he or she is not required to meet any of the standards outlined in 40 CFR 262 through 266 (except for 262.11), 268, and 270.)</p> <p>(NOTE: If a facility mixes its waste with used oil, the mixture is subject to the requirements in Subpart G of 40 CFR 279 if it is destined to be burned for energy recovery (see <i>Petroleum, Oil, and Lubricant (POL) Management</i>).)</p> <p>(NOTE: Quantities of acute hazardous waste greater than listed amounts are required to be handled according to the standards in 40 CFR 262 through 266, 268, 270, and 124.)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-16. Empty containers at CESQGs previously holding hazardous wastes must meet the regulatory definition of <i>empty</i> before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p>...</p> | <p>Verify that for containers or inner liners holding hazardous wastes, all wastes are removed that can be removed using common practices, and no more than 2.5 cm [1 in] of residue remains. (15)(16)(17)</p> <p>Verify that for containers or inner liners, if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains. (15)(16)(17)</p> <p>Verify that for containers, or inner liners where the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains. (15)(16)(17)</p> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmospheric. (15)(16)(17)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5, one of the following is done: (15)(16)(17)</p> <ul style="list-style-type: none"> - it is triple rinsed - it is cleaned by another method identified through the literature or testing as achieving equivalent removal - the inner liner is removed. <p>...</p> |
| <p>4-17. Containers at CESQGs should be managed properly (GMP).</p> <p>...</p> | <p>Verify the following by inspecting storage areas: (15)(16)(17)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) - at least 3 ft [0.91 m], of aisle space is provided between rows of containers. <p>...</p> |
| <p>4-18. Containers of hazardous waste should be kept in designated storage areas at CESQGs (GMP).</p> <p>...</p> | <p>Verify that all hazardous waste containers are identified and stored in appropriate areas. (15)(16)(17)</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>SMALL QUANTITY GENERATORS (SQGs)</p> <p>General</p> <p>4-19. Generators of more than 100 kg [220.46 lb] but less than 1000 kg [2204.62 lb] of hazardous waste per month may qualify as an SQG that can accumulate hazardous waste onsite for 180 days without a permit if specific conditions are met (40 CFR 262.34(d)(1), 262.34(d)(4), 262.34(e), and 262.34(f)).</p> | <p>Inspect containers, storage, and records. (15)(16)(17)</p> <p>Verify that no more than 1000 kg [2204.62 lb] of hazardous waste is generated in any month. (15)(16)(17)</p> <p>Verify that the onsite accumulation time does not exceed 180 days. (15)(16)(17)</p> <p>(NOTE: The 180-day time period is extended to 270 days if the waste must be transported more than 200 mi [321.87 km] to a TSDF.)</p> <p>Verify that no more than 6000 kg [13,227.73 lb] is allowed to accumulate at the facility. (15)(16)(17)</p> <p>Verify that containers are marked with the date accumulation began and the words HAZARDOUS WASTE. (15)(16)(17)</p> <p>Verify that the containers and the areas where containers are stored meet the requirements outlined in the checklist items in the sections titled: <i>SQGs: Containers</i>, <i>SQGs: Container Storage</i>, and <i>SQGs: Tank Systems Storage</i>. (15)(16)(17)</p> <p>(NOTE: When an SQG exceeds the quantity generation or the amount accumulation limits, it becomes subject to either the Generator requirements or all TSDF requirements. When an SQG exceeds the storage time limitation, it becomes subject to full TSDF requirements.)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-20. SQGs that generate, transport, or handle hazardous wastes must obtain a USEPA ID No. (40 CFR 262.12(a), 262.12(b), and 265.11).</p> <p style="text-align: center;">...</p> <p>4-21. SQGs of hazardous waste are required to use manifests and keep records of hazardous waste activity (40 CFR 262.20, 262.42(b), and 262.44).</p> <p style="text-align: center;">...</p> <p>4-22. SQGs are required to have an emergency coordinator and emergency response planning (40 CFR 262.34(d)(5)).</p> <p style="text-align: center;">...</p> | <p>Examine documentation from the USEPA for the facility's generator ID No. (15)(16)(17)</p> <p>Verify that the correct ID No. is used on all appropriate documentation (i.e., manifests). (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that signed copies of returned manifests are kept for 3 yr. (15)(16)(17)</p> <p>Verify that exception reports were submitted to the USEPA Regional Administrator when a signed manifest copy was not received within 60 days of the waste being accepted by the initial transporter. (15)(16)(17)</p> <p>Verify that exception reports are kept for at least 3 yr. (15)(16)(17)</p> <p>Verify that records of test results, waste analyses, and determinations are kept for 3 yr. (15)(16)(17)</p> <p>(NOTE: The period of record retention is extended automatically during the course of any unresolved enforcement action.)</p> <p>(NOTE: The requirement to prepare a manifest does not apply if:</p> <ul style="list-style-type: none"> - the waste is reclaimed under contractual agreement and: <li style="padding-left: 20px;">- the type of waste and frequency of shipments are specified in the agreement <li style="padding-left: 20px;">- the vehicle used to transport the waste to the recycling facility and to deliver regenerated material back to the generator is owned and operated by the reclaimer - the generator maintains a copy of the reclamation agreement for at least 3 yr after termination of the agreement.) <p style="text-align: center;">...</p> <p>Verify that the facility has an emergency coordinator. (15)(16)(17)</p> <p>Verify that the following emergency information is posted next to the telephone: (15)(16)(17)</p> <ul style="list-style-type: none"> - name and telephone number of emergency coordinator - location of fire extinguishers and spill control materials - location of fire alarms (if present) - telephone number of fire department. <p>Verify that waste handlers are familiar with waste handling and emergency procedures. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>SQG - Containers</p> <p>4-23. Empty containers at SQGs previously holding hazardous wastes must meet the regulatory definition of <i>empty</i> before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p>...</p> <p>4-24. Containers used to store hazardous waste at SQGs must be in good condition and not leaking (40 CFR 262.34(d)(2) and 265.171).</p> <p>...</p> <p>4-25. Containers used at SQGs must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(d)(2) and 265.172).</p> <p>...</p> <p>4-26. Containers of hazardous waste at SQGs must be closed during storage and handled in a safe manner (40 CFR 262.34(d)(2) and 265.173).</p> <p>...</p> | <p>Verify that for containers or inner liners holding hazardous wastes, all wastes are removed that can be removed using common practices and no more than 2.5 cm [1 in.], of residue remains. (15)(16)(17)</p> <p>Verify that for containers or inner liners, if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains. (15)(16)(17)</p> <p>Verify that for containers or inner liners, when the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains. (15)(16)(17)</p> <p>Verify that for containers that held a compressed gas, the pressure in the container approaches atmospheric. (15)(16)(17)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5, one of the following is done: (15)(16)(17)</p> <ul style="list-style-type: none"> - it is triple rinsed - it is cleaned by another method identified through the literature or testing as achieving equivalent removal - the inner liner is removed. <p>...</p> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented. (15)(16)(17)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (15)(16)(17)</p> <p>...</p> <p>Verify that containers are compatible with waste; in particular, check that strong caustics and acids are not stored in plastic drums. (15)(16)(17)</p> <p>...</p> <p>Verify that containers are closed except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (15)(16)(17)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (15)(16)(17)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-27. The handling of incompatible wastes or incompatible wastes and materials in containers at SQGs must comply with safe management practices (40 CFR 262.34(d)(2) and 265.177).</p> <p>...</p> <p>4-28. Containers of hazardous waste at SQGs should be managed properly (GMP).</p> <p>...</p> | <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers, unless it is done so that they do not: (15)(16)(17)</p> <ul style="list-style-type: none"> - generate extreme heat or pressure, fire or explosion, or violent reaction - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion - damage the structural integrity of the device or facility - threaten human health by any other like means. <p>(NOTE: Check for hydrocarbons in acid drums and other incompatible wastes as listed in Appendix 4-6.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (15)(16)(17)</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device. (15)(16)(17)</p> <p>...</p> <p>Inspect containers and storage areas to determine the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) - at least 3 ft [0.91 m] of aisle space is provided between rows of containers. <p>...</p> |

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| COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| SQG - Container Storage Areas 4-29. Containers of hazardous waste at SQGs should be kept in designated storage areas (GMP). ... 4-30. SQG storage areas must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(d)(4) and 265.30 through 265.37). ... 4-31. SQGs must conduct weekly inspections of container storage areas (40 CFR 262.34(d)(2) and 265.174). ... | Verify that all containers are identified and stored in appropriate areas. (15)(16)(17) (NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.) ... Determine, by inspecting the SQG facility, if the following required equipment is easily accessible and in working condition: (15)(16)(17) <ul style="list-style-type: none"> - internal communications or alarm system capable of providing immediate emergency instruction to facility personnel - telephone or hand-held two-way radio - portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals) - spill control equipment - decontamination equipment - fire hydrants or other sources of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems. Determine if equipment is tested and maintained as necessary to ensure proper operation in an emergency. (15)(16)(17) Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation. (15)(16)(17) Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations. (15)(16)(17) Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (15)(16)(17) ... Verify that inspections are conducted at least weekly to locate leaking containers and signs of deterioration of containers. (15)(16)(17) (NOTE: This includes accumulation points.) ... |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>SQG - Tank System Storage</p> <p>4-32. SQGs must comply with certain storage tank requirements (40 CFR 262.34(d)(3) and 265.201(a) through 265.201(c)).</p> | <p>Determine if the facility is an SQG that stores or treats wastes in tanks, and verify that: (7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - the tank prevents: <ul style="list-style-type: none"> - generation of extreme heat or pressure, fire or explosion, or violent reaction - production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment - production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion - damage to structural integrity of the device or facility - threats to human health or the environment through other means - no treatment reagent or hazardous wastes are placed in the tank that would cause it to rupture, leak, corrode, or otherwise fail before the end of its intended life - uncovered tanks have at least 60 cm (2 ft) of freeboard, unless the tank has a containment structure, drainage control system, or a diversion structure with a volume that equals or exceeds the capacity of the top 60 cm (2 ft) of the tank - continuous feed tanks have a wastefeed cutoff or other stop/bypass system. <p>Verify that the following are inspected at the indicated times: (7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - discharge control equipment at least once each operating day - monitoring equipment (pressure and temperature gauges) at least once each operating day - waste level in tank at least once each operating day - construction material of the tank for corrosion or leakage weekly - surrounding area for leakage and/or contamination at least weekly. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-33. Tank systems at SQGs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(d)(3) and 265.201(e) through 265.201(f)).</p> <p style="text-align: center;">...</p> <p>4-34. SQGs must comply with specific tank closure requirements (40 CFR 265.201(d)).</p> <p style="text-align: center;">...</p> | <p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is done: (15)(16)(17)</p> <ul style="list-style-type: none"> - the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable, and the minimum requirements for reactive and ignitable wastes are met - the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react - the tank system is used solely for emergencies. <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's (NFPA's) <i>Flammable and Combustible Liquids Code</i>, are maintained. (15)(16)(17)</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same tank system, unless minimum safety requirements are met. (15)(16)(17)</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless minimum safety requirements are met. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that tank systems that are closed or in the process of being closed have all hazardous waste removed from tanks, discharge control equipment, and discharge confinement structures. (2)(5)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>GENERATORS</p> <p>General</p> <p>4-35. A generator that generates, transports, or handles hazardous wastes must obtain a USEPA ID No. (40 CFR 262.12(a), 262.12(b), 264. 11, and 265.11).</p> <p style="text-align: center;">...</p> | <p>Examine documentation from the USEPA for the facility's generator ID No. (15)(16)(17)</p> <p>Verify that the correct ID No. is used on all appropriate documentation (i.e., manifests). (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>4-36. Generators may accumulate hazardous waste onsite for 90 days or less without a permit or interim status, provided they meet certain conditions (40 CFR 262.34(a)(2), 262.34(a)(3), and 262.34(b)).</p> | <p>Inspect each accumulation point, and interview the accumulation point manager. Verify that: (15)(16)(17)</p> <ul style="list-style-type: none"> - the recorded start date indicates no container or tank has been accumulating a hazardous waste for more than 90 days - each container and tank is labeled or marked clearly with the words HAZARDOUS WASTE. <p>Verify that containers, drip pads, and tanks meet the standards outline in the checklist items in the sections titled <i>Generators: Containers</i>, <i>Generators: Container Storage Areas</i>, <i>Generators: Tank System Storage</i>, and <i>Generators: Containment Buildings</i>. (15)(16)(17)</p> <p>(NOTE: A generator who meets these standards is exempt from meeting the closure requirements outlined in 40 CFR 265.110 through 265.150, except for 265.112 and 265.114.)</p> <p>(NOTE: A generator who accumulates hazardous waste for more than 90 days (without an extension), is subject to all storage facility and permitting requirements.)</p> |
| <p>4-37. All generator facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 262.34(a)(4) and 265.30 through 265.37).</p> | <p>Determine if the following required equipment is easily accessible and in working condition at the facility: (5)(7)(8)(10)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - internal communications or alarm system capable of providing immediate emergency instruction to facility personnel - telephone or hand-held two-way radio - portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals) - spill control equipment - decontamination equipment - fire hydrants or other sources of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems. <p>Determine if equipment is tested and maintained as necessary to ensure proper operation in an emergency. (5)(7)(8)(10)(13)(15)(16)(17)</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation. (5)(7)(8)(10)(13)(15)(16)(17)</p> <p>Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations. (5)(7)(8)(10)(13)(15)(16)(17)</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (5)(7)(8)(10)(13)(15)(16)(17)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-38. Generators must have a contingency plan (40 CFR 262.34(a)(4) and 265.50 through 265.54).</p> | <p>(NOTE: Generating facilities may be addressed in the facility's Spill Prevention, Control, and Countermeasure (SPCC) Plan or other emergency plan or, if neither exists, in a separate contingency plan.)</p> <p>Verify that the contingency plan is designed to minimize hazards to human health or the environment from fire, explosion, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents. (5)(7)(8)(10)(13)(15)(16)(17)</p> <p>Verify that the plan includes the following: (5)(7)(8)(10)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - a description of actions to be taken during an emergency - a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams - names, addresses, and phone numbers of all people qualified to act as emergency coordinator - a list of all emergency equipment at the facility, where this equipment is required and located, and what it looks like - an evacuation plan for facility personnel where there is a possibility evacuation would be required. <p>Verify that copies of the contingency plan are maintained at the facility and submitted to organizations that may be called upon to provide emergency services. (5)(7)(8)(10)(13)(15)(16)(17)</p> <p>Verify that the contingency plan is routinely reviewed and updated, especially when: the facility is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes. (5)(7)(8)(10)(13)(15)(16)(17)</p> |

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| <p>4-39. Each generator must have an emergency coordinator on the facility premises or on-call at all times (40 CFR 262.34 (a)(4) and 265.55).</p> <p style="text-align: center;">...</p> <p>4-40. Emergency coordinators at generators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 262.34 (a)(4) and 265.56(a) through 265.56(i)).</p> <p style="text-align: center;">...</p> <p>4-41. Generator facility operators must record the time, date, and details of any incident that requires implementing the contingency plan (40 CFR 262.34(a)(4) and 265.56(j)).</p> <p style="text-align: center;">...</p> | <p>Verify that at all times, there is at least one employee at the facility or on call with the responsibility for coordinating all emergency response measures. (5)(8)(15)(16)(17)</p> <p>Verify that the emergency coordinator is thoroughly familiar with the facility, the characteristics of the waste handled, and the provisions of the contingency plan. In addition, verify that the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Review the contingency plan for the generator facility. (5)(8)(15)(16)(17)</p> <p>Verify that the emergency coordinator is required to follow these emergency procedures: (5)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - immediately activate facility alarms or communication systems and notify appropriate facility, state, and local response parties - identify the character, exact source, amount, and extent of any released materials - assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.) - stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases - collect and contain the released waste - remove or isolate containers when necessary - monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate - provide for treatment, storage, or disposal of recovered waste, contaminated soil, surface water, or other material - ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed - ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed - notify the USEPA and appropriate state and local authorities when cleanup is complete and operation resumes. <p style="text-align: center;">...</p> <p>Determine, through a review of the facility operating records, if incidents have been recorded and corrective actions taken. (5)(15)(16)(17)</p> <p>Verify that written reports have been submitted to the USEPA Regional Administrator within 15 days after the incident. (5)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>4-42. Facilities that are generators are required to use manifests, maintain records, and file manifest exception reports (40 CFR 262.42(a)).</p> <p>...</p> <p>GENERATORS - Containers</p> <p>4-43. Empty containers at generators previously holding hazardous wastes must meet the regulatory definition of <i>empty</i> before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p>...</p> <p>4-44. Containers used to store hazardous waste at generators must be in good condition and not leaking (40 CFR 262.34 (a)(1)(i) and 265.171).</p> <p>...</p> <p>4-45. Containers used at generators must be made of or lined with materials compatible with the waste stored in them (40 CFR 262.34(a)(1)(i) and 265.172).</p> <p>...</p> | <p>Verify that exception reports are filed with the USEPA Regional Administrator if a copy of the manifest is not received within 45 days after the waste is accepted by the initial transporter. (15)(16)(17)</p> <p>Verify that exception reports are kept for 3 yr. (15)(16)(17)</p> <p>(NOTE: Periods of retention for reports may be extended automatically during the course of any unresolved enforcement action.)</p> <p>...</p> <p>Verify that for containers or inner liners holding hazardous wastes, all wastes are removed that can be removed using common practices and no more than 2.5 cm [1 in.] of residue remains. (15)(16)(17)</p> <p>Verify that for containers or inner liners, if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains.</p> <p>Verify that for containers or inner liners when the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains.</p> <p>Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric.</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5 that one of the following is done:</p> <ul style="list-style-type: none"> - it is triple rinsed - it is cleaned by another method identified through the literature or testing as achieving equivalent removal - the inner liner is removed. <p>...</p> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented. (15)(16)(17)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (15)(16)(17)</p> <p>...</p> <p>Verify that containers are compatible with waste; in particular, check that strong caustics and acids are not stored in plastic drums. (15)(16)(17)</p> <p>...</p> |

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| <p>4-46. Containers at generators must be closed during storage and handled in a safe manner (40 CFR 262.34(a)(1)(i) and 265.173).</p> <p style="text-align: center;">...</p> <p>4-47. The handling of incompatible wastes or incompatible wastes and materials in containers at generators must comply with safe management practices (40 CFR 262.34(a)(1)(i) and 265.177).</p> <p style="text-align: center;">...</p> <p>4-48. Containers used to store hazardous waste at generators should be managed properly (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that containers are closed, except when it is necessary to add or remove waste (check bungs on drums, look for funnels). (15)(16)(17)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers, unless it is done so that they do not. (8)(15)(16)(17)</p> <ul style="list-style-type: none"> - generate extreme heat or pressure, fire or explosion, or violent reaction - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions - damage the structural integrity of the device or facility - by any other like means threaten human health. <p>(NOTE: Check for hydrocarbons in acid drums and other incompatible wastes as listed in Appendix 4-6.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (8)(15)(16)(17)</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device. (8)(15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify the following by inspecting container storage areas: (15)(16)(17)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) - at least 3 ft [0.91 m] of aisle space is provided between rows of containers. <p style="text-align: center;">...</p> |

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| <p>GENERATORS - Container Storage Areas</p> <p>4-49. At generators, containers of hazardous waste should be kept in designated storage areas (GMP).</p> <p>...</p> <p>4-50. Containers holding ignitable or reactive waste must be located at least 15 m (50 ft) away from the property line at generators (40 CFR 262.34(a)(1)(i) and 265.176).</p> <p>...</p> <p>4-51. Generators must conduct weekly inspections of container storage areas (40 CFR 262.34(a)(1)(i) and 265.174).</p> <p>...</p> | <p>Verify that all containers are identified and stored in appropriate areas. (15)(16)(17)</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>...</p> <p>Determine the distance from storage containers holding ignitable or reactive waste to the property line. (15)(16)(17)</p> <p>...</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (8)(15)(16)(17)</p> <p>...</p> |

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| <p>GENERATORS - Tank System Storage</p> <p>4-52. Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at generators (40 CFR 262.34 (a)(1)(ii), 265.190(a), 265.190(b), and 265.193(a)).</p> | <p>Verify that the following types of tanks used to store or treat hazardous waste have secondary containment: (2)(5)(7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - all new tank systems or components - all existing tank systems used to store or treat USEPA Hazardous Waste No. F020, F021, F022, F023, F026, and F027 - existing tank systems of known documented age that are 15 yr of age. <p>Verify that existing tank systems for which the age cannot be determined within 8 yr of 12 January 1987 and that are at a facility older than 7 yr. are provided with secondary containment by the time the facility reaches 15 yr of age or 12 January 1989, whichever comes later. (2)(5)(7)(8)(15)(16)(17)</p> <p>(NOTE: The following are exempt from these requirements:</p> <ul style="list-style-type: none"> - tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor - tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.) |

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| <p>4-53. Secondary containment on tank systems at generators must meet specific requirements (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(b) through 265.193(d)).</p> | <p>Verify that secondary containment meets the following criteria: (5)(7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is designed, installed, and operated to prevent the migration of liquid out of the system - it is capable of detecting and collecting releases and accumulated liquids until removal is possible - it is constructed of or lined with materials compatible with the wastes - it is placed on a foundation or base that can provide appropriate support and prevent failure as a result of settlement, compression, or upset - a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time - it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation. <p>Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. (5)(7)(8)(15)(16)(17)</p> <p>Verify that secondary containment for tanks includes one or more of the following: (5)(7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - a liner (external to the tank) - a vault - a double-walled tank - an equivalent approved device. <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> |

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| <p>4-54. External liners, vaults, and double-walled tanks at generators are required to meet specific standards (40 CFR 262.34(a)(1)(ii), 265.190 (a), and 265.193(e)).</p> | <p>Verify that external liner systems meet the following requirements: (2)(5)(7)(8)(10)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - they are designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained - they prevent run-on and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle run-on or infiltration - they are free of cracks or gaps - they surround the tank completely and cover all surrounding earth likely to come into contact with the waste if there is a release - their capacity is sufficient to contain precipitation from a 25-yr. 24-h rainfall event. <p>Verify that vault systems meet the following criteria: (2)(5)(7)(8)(10)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - they will contain 100 percent of the capacity of the largest tank within their boundaries - they prevent run-on and infiltration of precipitation unless there is sufficient excess capacity - they are constructed with chemical-resistant water stops at all joints - they have impermeable interior coatings that are compatible with the wastes they contain - they have a means to protect against the formation and ignition of vapors within the vault if the waste is ignitable or reactive - they have an exterior moisture barrier or otherwise operate to prevent migration of moisture into the vault. <p>Verify that double-walled tanks meet the following criteria: (2)(5)(7)(8)(10)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - they are designed as an integral structure so that any release is contained by the outer shell - they are protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal - they have a built-in, continuous leak detection system capable of detecting a release within 24 h. <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> |

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| <p>4-55. Tank ancillary equipment at generators must also be provided with secondary containment (40 CFR 262.34 (a)(1)(ii), 265.190(a), and 265.193 (f)).</p> <p style="text-align: center;">...</p> <p>4-56. Tank systems that are required to have secondary containment at generators that do not have secondary containment are required to meet specific requirements (40 CFR 262.34.(a)(1)(ii), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).</p> <p style="text-align: center;">...</p> <p>4-57. Generators with new tank systems must submit to the Regional Administrator a written assessment review certified by an independent, qualified, registered, professional engineer to certify that the tank system was installed according to specific standards (40 CFR 262.34(a)(1)(ii) and 265.192).</p> | <p>Verify that ancillary equipment, except for the following, has secondary containment: (15)(16)(17)</p> <ul style="list-style-type: none"> - aboveground piping that is visually inspected for leaks on a daily basis - welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis - sealless or magnetic coupling pumps and sealless valves that are visually inspected for leaks on a daily basis - pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> <p style="text-align: center;">...</p> <p>Verify that tank systems without secondary containment meet the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - for nonenterable underground tanks, a leak test is conducted annually - for other than nonenterable underground tanks, either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered, professional engineer. <p>Verify that the facility maintains a record of the results of testing and assessments. (15)(16)(17)</p> <p>Verify that tank systems that store or treat materials that become hazardous waste after 14 July 1986 are assessed within 12 mo after the waste becomes hazardous. (15)(16)(17)</p> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> <p style="text-align: center;">...</p> <p>Determine if the facility has any new tank systems. (15)(16)(17)</p> <p>Verify that when the tanks are installed, they are handled so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance. (15)(16)(17)</p> <p>Verify that the facility keeps on file the written assessments from those individuals required to certify the tank and supervise the installation of the tank. (15)(16)(17)</p> |

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| <p>4-58. Tanks used for hazardous waste treatment or storage at generators must follow certain operating requirements (40 CFR 262.34 (a)(1)(ii) and 265.194).</p> <p style="text-align: center;">...</p> <p>4-59. Tank systems at generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(a)(1)(ii), 265.198, and 265.199).</p> <p style="text-align: center;">...</p> | <p>Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment or containment system) to fail. (15)(16)(17)</p> <p>Verify that appropriate measures are taken to prevent overfill, including: (15)(16)(17)</p> <ul style="list-style-type: none"> - spill prevention controls - overfill prevention controls - maintenance of sufficient freeboard to prevent overtopping by waves, wind action, or precipitation for uncovered tanks. <p style="text-align: center;">...</p> <p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: (5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable, and the minimum requirements for reactive and ignitable wastes are met - the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react - the tank system is used solely for emergencies. <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or adjoining property lines that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's <i>Flammable and Combustible Liquids Code</i> are maintained. (5)(7)(8)(10)(15)(16)(17)</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same tank system, unless minimum safety requirements are met. (5)(7)(8)(10)(15)(16)(17)</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless minimum safety requirements are met. (5)(7)(8)(10)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>4-60. Generators must conduct inspections of tank systems and associated equipment (40 CFR 262.34(a)(1)(ii) and 265.195).</p> <p style="text-align: center;">...</p> | <p>Verify that a schedule and procedure has been developed and is followed to inspect overfill controls at permitted facilities. (15)(16)(17)</p> <p>Determine if inspections of the following are conducted at least once a day: (15)(16)(17)</p> <ul style="list-style-type: none"> - data gathered from monitoring and leak detection equipment - overfill/spill control equipment at interim state facilities to ensure it is in good working order - aboveground portions of the tank to detect corrosion or releases - tank monitoring equipment (e.g., pressure and temperature gauges) - area surrounding tank, including the secondary containment system, for signs of leakage (wet spots, dead vegetation). <p>Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter. (15)(16)(17)</p> <p>Verify that all sources of impressed current are inspected and/or tested every other month. (15)(16)(17)</p> <p>Verify that inspections are documented. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-61. Tank systems or secondary containment systems at Generators, from which there has been a leak or spill or that have been declared unfit for use, must be removed from service immediately and meet specific requirements (40 CFR 262.34(a)(1)(ii) and 265.196).</p> <p style="text-align: center;">...</p> | <p>Verify that the following steps are taken: (2)(5)(7)(15)(16)(17)</p> <ul style="list-style-type: none"> - the flow or addition of hazardous wastes to the tank is stopped - the hazardous waste is removed from the tank: <ul style="list-style-type: none"> - within 24 h of detection (or other reasonable time as demonstrated by the owner/operator), and as much waste is removed from the tank as necessary to prevent further release and allow inspection and repair - within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment), and waste released to the secondary containment system is removed - a visual inspection of the release is done and: <ul style="list-style-type: none"> - action is taken to prevent further migration to soils, surface water, or groundwater - any visible contamination of soil and surface water is removed and disposed of. <p>Verify that notification is made to the USEPA Regional Administrator within 24 h for any release to the environment. (2)(5)(7)(15)(16)(17)</p> <p>Verify that a report is submitted within 30 days. (2)(5)(7)(15)(16)(17)</p> <p>(NOTE: Releases of 0.45 kg (1 lb) or less that are immediately contained and cleaned up are exempt from reporting.)</p> <p>Verify that the tank and/or secondary containment is repaired before its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer. (2)(5)(7)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| COMPLIANCE CATEGORY: HAZARDOUS WASTE MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>4-62. Generators are required to follow specific procedures when closing a tank system (40 CFR 262.34(a)(1)(ii), 265.197(a), and 265.197(b)).</p> <p>...</p> <p>GENERATORS - Personnel Training Requirements</p> <p>4-63. All facility personnel who handle hazardous waste must meet certain training requirements (40 CFR 264.16(a) through 264.16(c) and 265.16(a) through 265.16(c)).</p> <p>...</p> | <p>Determine if the facility has closed any tank systems. (15)(16)(17)</p> <p>Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated. (15)(16)(17)</p> <p>Verify that if it is not possible and/or practicable to remove or decontaminate all soils, the facility closes the tank and performs post-closure care as is required for landfills. (15)(16)(17)</p> <p>...</p> <p>Verify that the training program is directed by a person trained in hazardous waste management procedures. (5)(8)(13)(15)(16)(17)</p> <p>Verify that the training program includes the following: (5)(8)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - contingency plan implementation - key parameters for automatic waste feed cut-off system - procedures for using, inspecting, and repairing emergency and monitoring equipment - operation of communications and alarm systems - response to fire or explosion - response to leaks or spills - waste turn-in procedures - identification of hazardous wastes - container use, marking, labeling, and on-facility transportation - manifesting and off-facility transportation - accumulation point management - personnel health and safety and fire safety - facility shutdown procedures. <p>Verify that new employee training is completed within 6 mo of employment. (5)(8)(13)(15)(16)(17)</p> <p>Verify that an annual review of initial training is provided. (5)(8)(13)(15)(16)(17)</p> <p>Verify that employees do not work unsupervised until training is completed. (5)(8)(13)(15)(16)(17)</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (5)(8)(13)(15)(16)(17)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-64. Training records must be maintained for all facility staff who manage hazardous waste (40 CFR 264.16(d), 264.16(e), 265.16(d), and 265.16(e)).</p> <p>...</p> <p>GENERATORS - Containment Buildings</p> <p>...</p> <p>4-65. Generators with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 262.34 (a)(1)(iv), 264.1100, and 265.1100).</p> <p>...</p> | <p>Examine training records and verify they include the following: (1)(15)(16)(17)</p> <ul style="list-style-type: none"> - job title and description for each employee by name - written description of how much training each position will obtain - documentation of training received by name. <p>Determine if training records are retained for 3 yr after employment at the facility. (1)(15)(16)(17)</p> <p>Verify that records are transferred with employees. (1)(15)(16)(17)</p> <p>...</p> <p>(NOTE: According to the <i>Background Information</i> published on page 37221 of the 18 August 1992 edition of the <i>Federal Register</i>, a hazardous waste containment building involves "the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit". This is not a building that holds drums or tanks filled with hazardous waste, but a building that holds the hazardous waste itself.)</p> <p>Verify that the containment building meets the following: (7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit - it is designed to prevent failure as a result of pressure gradients, settlement, compression, uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations - it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel and wastes and the handling of equipment within the unit - if the unit is used to manage liquids: <ul style="list-style-type: none"> - there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier - there is a liquid collection system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier - there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time - it has controls sufficient to prevent fugitive dust emissions - it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-66. Containment buildings are required to be designed according to specific standards (40 CFR 262.34(a)(1)(iv), 264.1101(a)(1) through 264.1101(a)(2), 264.1101(b), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).</p> | <p>Verify that the containment building meets the following design standards: (2)(5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes - the floor and containment walls, including any required secondary containment system, are designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit - it is designed to prevent failure as a result of pressure gradients, settlement, compression, uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations - it has sufficient structural strength to prevent collapse or other failure - all surfaces in contact with hazardous wastes are compatible with the wastes - it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel and wastes and the handling of equipment within the unit and that is appropriate for the chemical and physical characteristics of the waste. <p>Verify that if the containment building is going to manage hazardous wastes that have free liquids or are treated with free liquids, the following design requirements are also met: (2)(5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface) - there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier: <ul style="list-style-type: none"> - the primary barrier is sloped to drain liquids to the associated collection system - liquids and wastes are collected and removed at the earliest practicable time to minimize hydraulic head on the containment system - there is a secondary containment system, including a secondary barrier, that is designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-66. (continued)</p> | <ul style="list-style-type: none"> - the leak detection component of the secondary containment system meets the following: <ul style="list-style-type: none"> - it is constructed with a bottom slope of 1 percent or more - it is constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/s [3.94×10^{-3} in./s] or more and a thickness of 12 in. [30.5 cm] or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/s [3.23×10^{-4} ft²/s] or more - if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building - the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and any equipment used. <p>(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:</p> <ul style="list-style-type: none"> - the doors and windows provide an effective barrier against fugitive dust emissions - the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.) <p>(NOTE: A containment building can serve as secondary containment system for tanks within the building if:</p> <ul style="list-style-type: none"> - it meets the requirements of 264.193(d)(1) (see checklist item 4-99) - it meets the requirements of 264.193(b) and 264.193(c)(1) through 264.193(c)(2) (see checklist item 4-99).) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>4-67. Containment buildings are required to be operated according to specific standards (40 CFR 262.34(a)(1)(iv), 264.1101(a)(3), 264.1101(c)(1), 264.1101(c)(4), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).</p> <p style="text-align: center;">...</p> | <p>Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail. (15)(16)(17)</p> <p>Verify that the following operational procedures are done: (15)(16)(17)</p> <ul style="list-style-type: none"> - controls and practices are used to ensure the containment of the waste within the building - the primary barrier is maintained so that it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier - the level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded - measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the handling of the waste - there is a designated area for the decontamination of equipment and collection of rinsate - any collected rinsate is managed as needed according to its constituents - measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions - particulate collection devices are maintained and operated according to sound air pollution control practices. <p>Verify that data is gathered from monitoring and leak detection equipment, and the site is inspected at least once every 7 days, and the results are recorded in the operating record. (15)(16)(17)</p> <p>Verify that there is a written description of procedures to ensure that waste does not remain in the building for more than 90 days. (15)(16)(17)</p> <p>Verify that there is documentation that the waste does not remain for more than 90 days. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-68. Containment buildings are required to be certified by a registered, professional engineer (40 CFR 262.34(a)(1)(iv), 264.1101(c)(2), and 265.1101(c)(2)).</p> <p style="text-align: center;">...</p> | <p>Verify that the building has been certified by a qualified, registered, professional engineer. (2)(5)(7)(8)(10)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-69. Leaks in containment buildings must be repaired and reported (40 CFR 262.34(a)(1)(iv), 264.1101(c)(3), and 265.1101(c)(3)).</p> | <p>Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly. (15)(16)(17)</p> <p>Verify that when a leak is discovered: (15)(16)(17)</p> <ul style="list-style-type: none"> - the discovery is recorded in the facility operating record - the portion of the containment building that is affected is removed from service - a cleanup and repair schedule is established - within 7 days the Regional Administrator is notified, and within 14 working days, written notice is provided to the Regional Administrator - the Regional Administrator is notified upon the completion of all repairs and certification from a qualified registered professional engineer is also submitted. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-70. Containment buildings that have both areas with and without secondary containment must meet specific requirements (40 CFR 262.34(a)(1)(iv), 264.1101(d), and 265.1101(d)).</p> <p style="text-align: center;">...</p> <p>4-71. When a containment building is closed, specific requirements must be met (40 CFR 262.34(a)(1)(iv), 264.1102, and 265.1102).</p> <p style="text-align: center;">...</p> | <p>Verify that each area is designed and operated according to the appropriate requirements. (2)(5)(15)(16)(17)</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. (2)(5)(15)(16)(17)</p> <p>Verify that a written description is maintained in the facility operating log of operating procedures used to maintain the integrity of areas without secondary containment. (2)(5)(15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Determine if the facility has closed a containment building recently. (15)(16)(17)</p> <p>Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated. (15)(16)(17)</p> <p>Verify that the containment building is closed in accordance with closure and post-closure requirements for TSDFs, as outlined in the checklist items of the sections titled <i>ALL TSDFs - Documentation</i> and <i>ALL TSDFs - Closure</i>. (15)(16)(17)</p> <p>Verify that if it is determined that not all contaminated subsoils can be practicably removed or decontaminated, the facility is closed and landfill postclosure requirements are implemented. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>TRANSPORTATION</p> <p>4-72. Transporters of hazardous waste that is required to be manifested must have a USEPA ID No. and must comply with manifest management requirements (40 CFR 263.10(a), 263.10(b), 263.11, 263.20(a) through 263.20(d), 263.21, and 263.22(a)).</p> <p>...</p> <p>4-73. Before transporting hazardous waste or offering hazardous waste for transportation offsite in the United States, the facility must package and label the waste in accordance with the DOT regulations contained in 49 CFR 172, 173, 178, and 179 (40 CFR 262.30 through 262.33).</p> <p>...</p> | <p>(NOTE: These requirements do not apply to the onsite transportation of hazardous waste.)</p> <p>Determine if the facility transports hazardous waste offsite using its own vehicles or a contractor. (5)(15)(16)(17)</p> <p>Verify that the transporter has a USEPA ID No. (5)(15)(16)(17)</p> <p>Verify that all waste accepted for transport is accompanied by a manifest. (5)(15)(16)(17)</p> <p>Verify that before transport, the transporter signs and dates the manifest and returns a copy to the generator before leaving the facility. (5)(15)(16)(17)</p> <p>Verify that the transporter retains a copy of the manifest after delivery. (5)(15)(16)(17)</p> <p>Verify that manifests are kept on file for 3 yr. (5)(15)(16)(17)</p> <p>(NOTE: This manual does not address special issues involved in the transportation of hazardous waste by rail or water.)</p> <p>...</p> <p>Verify that containers are properly constructed and contain no leaks, corrosion, or bulges by inspecting a sample of containers awaiting transport. (15)(16)(17)</p> <p>Examine end seams for minor weeping that indicates drum failure. (15)(16)(17)</p> <p>Verify that labeling and marking on each container is compatible with the manifests. (15)(16)(17)</p> <p>Verify that the following information is displayed on a random sample of containers of 110 gal [416.40 L] or less in accordance with 49 CFR 172.304: (15)(16)(17)</p> <p style="padding-left: 40px;">- HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency. Generator's name and address Manifest Document Number _____</p> <p>Verify that proper DOT placarding is available for the transporter. (15)(16)(17)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-74. Transporters of waste offsite must take immediate notification and cleanup action if a discharge occurs during transport (40 CFR 263.30 and 263.31).</p> <p align="center">...</p> <p>4-75. The facility should ensure that transportation of hazardous wastes between buildings is accomplished in accordance with GMPs to help prevent spills, releases, and accidents (GMP).</p> <p align="center">...</p> <p>4-76. Transporters must not store manifested shipments in containers meeting DOT packaging requirements for more than 10 days at a transfer facility (40 CFR 263.12).</p> <p align="center">...</p> | <p>Verify that transport operators have instructions to notify local authorities and take cleanup action so that the discharge does not present a hazard. (1)(2)(5)(8)</p> <p>Verify that transporters give notice to the National Response Center (NRC) and report in writing as required by 49 CFR 171.15 and 49 CFR 171.16. (1)(2)(5)(8)</p> <p align="center">...</p> <p>Determine if procedures exist to manage movement of hazardous wastes throughout the facility. (15)(16)(17)</p> <p>Determine if drivers are trained in spill control procedures. (15)(16)(17)</p> <p>Determine if provisions have been made for securing wastes in vehicles when transporting. (15)(16)(17)</p> <p align="center">...</p> <p>Determine if the facility has a transfer facility. (15)(16)(17)</p> <p>Verify the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - transfer facility storage is for 10 days or less - DOT packaging requirements are met - shipments are manifested and manifests accompany shipments - storage is consistent with GMPs. <p>(NOTE: Storage for more than 10 days will require a TSDF permit.)</p> <p align="center">...</p> |
| <p>ALL TSDFs</p> <p>General</p> <p>4-77. All permitted facilities are required to meet the hazardous waste management requirements outlined in their permit (40 CFR 264).</p> <p align="center">...</p> <p>4-78. All TSDFs that have Interim Status are required to meet the hazardous waste management requirements (40 CFR 265).</p> <p align="center">...</p> | <p align="center">...</p> <p>Examine the facility permit for required parameters. (15)(16)(17)</p> <p>Verify that the facility is not treating, storing, or disposing of any waste other than those listed in its Part A application. (15)(16)</p> <p align="center">...</p> <p>Examine facility interim status documentation (notification of hazardous waste activity and Part A application). (15)(16)(17)</p> <p align="center">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-79. All TSDFs that store, treat, transport, or handle hazardous wastes must obtain a USEPA ID No. (40 CFR 264.11 and 265.11).</p> <p style="text-align: center;">...</p> <p>4-80. Facilities with TSDFs must control entry to the active portion of each facility (40 CFR 264.14 and 265.14).</p> <p style="text-align: center;">...</p> | <p>Examine documentation from the USEPA for the facility's generator ID No. (15)(16)(17)</p> <p>Verify that correct ID No. is used on all appropriate documentation (i.e., manifests). (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that unless the facility can demonstrate that physical contact with the waste, structures, and equipment within the active portion of the facility will not injure unknowing or unauthorized people or livestock, and that the waste would not be disturbed, the following items are in place at the facility: (15)(16)(17)</p> <ul style="list-style-type: none"> - a 24-h surveillance system (e.g., television monitors, surveillance by guards) is in place and in operation - the facility is surrounded by a fence or natural barrier - entrances are locked or monitored by an attendant or roadway access is controlled. <p>(NOTE: These requirements are satisfied if the active portion of the facility is located within a fenced yard or locked building and:</p> <ul style="list-style-type: none"> - signs with the wording DANGER-UNAUTHORIZED PERSONNEL KEEP OUT, are posted at each entrance and other locations as appropriate - signs are legible from 25 ft [7.62 m].) <p style="text-align: center;">...</p> |

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| <p>4-81. All TSDFs must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned release of hazardous waste (40 CFR 264.30 through 264.37).</p> <p style="text-align: center;">...</p> | <p>Determine, by inspecting the TSDF, if the following required equipment is easily accessible and in working condition: (15)(16)(17)</p> <ul style="list-style-type: none"> - internal communications or alarm system capable of providing immediate emergency instruction to facility personnel - a telephone or hand-held two way radio - portable fire extinguishers and special extinguishing equipment (foam, inert gas, or dry chemicals) - spill control equipment - decontamination equipment - fire hydrants or other source of water (reservoir, storage tank, etc.) with adequate volume and pressure, foam producing equipment, automatic sprinklers, or water spray systems. <p>Determine if equipment is tested and maintained as necessary to insure proper operation in an emergency. (15)(16)(17)</p> <p>Verify that sufficient aisle space is maintained to allow unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of the facility operation. (15)(16)(17)</p> <p>Verify that police, fire departments, and emergency response teams are familiar with the layout of the facility, properties of the waste being handled, and general operations. (15)(16)(17)</p> <p>Verify that the hospital is familiar with the site and the types of injuries that could result in an emergency. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-82. All TSDFs must take precautions to prevent accidental ignition or reaction of ignitable or reactive wastes (40 CFR 264.17(a) and 265.17(a)).</p> <p style="text-align: center;">...</p> | <p>Verify from the operating record and/or observation that the following safe management practices are used: (15)(16)(17)</p> <ul style="list-style-type: none"> - wastes are separated and protected from sources of ignition or reaction - smoking and open flame is confined to specially designated locations when ignitable or reactive wastes is handled - NO SMOKING signs are used when necessary. <p style="text-align: center;">...</p> |
| <p>4-83. When TSDFs are required by specific treatment, storage, or disposal sections of the regulation to prevent reactions from ignitable, reactive, or incompatible wastes, specific standards must be met (40 CFR 264.17 (b) and 265.17(b)).</p> | <p>Verify from the operating record and/or observation that during treatment, storage, or disposal of ignitable or reactive wastes, or during mixing of incompatible wastes and other materials, precautions are taken to prevent the following reactions: (15)(16)(17)</p> <ul style="list-style-type: none"> - generation of extreme heat or pressure, fire or explosion, or violent reactions - production of uncontrolled toxic mists, fumes, dusts, or gases sufficient to threaten human health or the environment - production of uncontrolled flammable fumes or gases sufficient to pose a risk of fire or explosion - damage to the structural integrity of the device or facility - threats to human health or the environment through other like means. |

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| <p>4-84. A detailed chemical and physical analysis of a representative sample, as specified in the waste analysis plan, of the hazardous waste must be obtained before treatment, storage, or disposal (40 CFR 264.13(a) and 265.13(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that a detailed physical and chemical analysis is done of a representative sample of the wastes before treatment, storage, or disposal. (15)(16)(17)</p> <p>(NOTE: Prior studies and published information may be included as a part of the analysis.)</p> <p>Verify that the analysis is repeated as necessary to ensure that it is accurate and up to date, specifically if the process or operation generating the waste has changed. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-85. Each TSDF must have an emergency coordinator on the facility premises or on-call at all times (40 CFR 264.55 and 265.55).</p> <p style="text-align: center;">...</p> | <p>Verify that at all times, there is at least one employee at the facility or on-call with responsibility for coordinating all emergency response measures. (15)(16)(17)</p> <p>Verify that the emergency coordinator is thoroughly familiar with the facility, the characteristics of the waste handled, and the provisions of the contingency plan. (15)(16)(17)</p> <p>Verify that the emergency coordinator has the authority to commit the resources needed to carry out the contingency plan. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-86. TSDF emergency coordinators must follow certain emergency procedures whenever there is an imminent or actual emergency situation (40 CFR 264.56(a) through 264.56(i) and 265.56(a) through 265.56(i)).</p> <p style="text-align: center;">...</p> | <p>Review the contingency plan for the TSDF. (15)(16)(17)</p> <p>Verify that the emergency coordinator is required to follow these emergency procedures: (15)(16)(17)</p> <ul style="list-style-type: none"> - immediately activate facility alarms or communication systems and notify appropriate facility, state, and local response parties - identify the character, exact source, amount, and extent of any released materials - assess possible hazards to human health or the environment, including direct and indirect effects (e.g., release of gases, surface runoff from water or chemicals used to control fire or explosions, etc.) - stop processes and operations at the facility when necessary to prevent fires, explosions, or further releases - collect and contain the released waste - remove or isolate containers when necessary - monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment whenever appropriate - provide for treatment, storage, or disposal of recovered waste, contaminated soil, surface water, or other material - ensure that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup is completed - ensure that all emergency equipment is cleaned and fit for its intended use before operations are resumed - notify the USEPA and appropriate state and local authorities when cleanup is complete and operation resumes. <p style="text-align: center;">...</p> |

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| <p>ALL TSDF</p> <p>Personnel Training Requirements</p> <p>4-87. All TSDF personnel who handle hazardous waste must meet certain training requirements (40 CFR 264.16(a) through 264.16(c) and 265.16(a) through 265.16(c)).</p> <p>...</p> <p>4-88. Training records must be maintained for all TSDF staff who manage hazardous waste (40 CFR 264.16(d), 264.16(e), 265.1(d), and 265.16(e)).</p> <p>...</p> | <p>Verify that the training program is directed by a person trained in hazardous waste management procedures. (3)(5)</p> <p>Verify that the training program includes the following: (3)(5)</p> <ul style="list-style-type: none"> - contingency plan implementation - key parameters for automatic waste feed cut-off system - procedures for using, inspecting, and repairing emergency and monitoring equipment - operation of communications and alarm systems - response to fire or explosion - response to leaks or spills - waste turn-in procedures - identification of hazardous wastes - container use, marking, labeling, and on facility transportation - manifesting and off-facility transportation - accumulation point management - personnel health and safety and fire safety - facility shutdown procedures. <p>Verify that new employee training is completed within 6 mo of employment. (3)(5)</p> <p>Verify that an annual review of initial training is provided. (3)(5)</p> <p>Verify that employees do not work unsupervised until training is completed. (3)(5)</p> <p>Verify specifically that accumulation point managers and hazardous waste handlers have been trained. (3)(5)</p> <p>...</p> <p>Examine training records and verify they include the following: (3)(5)</p> <ul style="list-style-type: none"> - job title and description for each employee by name - written description of how much training each position will obtain - documentation of training received by name. <p>Determine if training records are retained for 3 yr after employment at the facility. (3)(5)</p> <p>Verify that records are transferred with employees. (3)(5)</p> <p>...</p> |

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| <p>ALL TSDFs - Containers</p> <p>4-89. Empty containers at TSDFs previously holding hazardous wastes must meet the regulatory definition of 'empty' before they are exempted from hazardous waste requirements (40 CFR 261.7).</p> <p>...</p> <p>4-90. Containers used to store hazardous waste at TSDFs must be in good condition and not leaking (40 CFR 264.171 and 265.171).</p> <p>...</p> <p>4-91. Containers used at TSDFs must be made of or lined with materials compatible with the waste stored in them (40 CFR 264.172 and 265.172).</p> <p>...</p> <p>4-92. Containers at TSDFs must be closed in a safe manner during storage and handled (40 CFR 264.173 and 265.173).</p> <p>...</p> | <p>Verify that for containers or inner liners holding hazardous wastes, all wastes are removed that can be removed using common practices and no more than 2.5 cm [1 in.] of residue remains. (15)(16)(17)</p> <p>Verify that for containers or inner liners if the container is less than or equal to 110 gal [416.40 L], no more than 3 percent by weight of total container capacity remains. (15)(16)(17)</p> <p>Verify that for containers or inner liners, if the container is greater than 110 gal [416.40 L], no more than 0.3 percent by weight of the total container capacity remains. (15)(16)(17)</p> <p>Verify that for containers that held a compressed gas the pressure in the container approaches atmospheric. (15)(16)(17)</p> <p>Verify that for containers or inner liners that held an acute hazardous waste listed in Appendix 4-5, one of the following is done: (15)(16)(17)</p> <ul style="list-style-type: none"> - it is triple rinsed - it is cleaned by another method identified through the literature or testing as achieving equivalent removal - the inner liner is removed. <p>...</p> <p>Verify that containers are not leaking, bulging, rusting, damaged, or dented. (15)(16)(17)</p> <p>Verify that waste is transferred to a new container or managed in another appropriate manner when necessary. (15)(16)(17)</p> <p>...</p> <p>Verify that containers are compatible with waste; in particular, check that strong caustics and acids are not stored in plastic drums. (15)(16)(17)</p> <p>...</p> <p>Verify that containers are closed, except when it is necessary to add or remove waste (check bungs and look for open funnels). (15)(16)(17)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (15)(16)(17)</p> <p>...</p> |

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| <p>4-93. The handling of incompatible wastes or incompatible wastes and materials in containers at TSDFs must comply with safe management practices (40 CFR 264.17(b), 264.177, 265.17(b), and 265.177).</p> | <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same containers, unless it is done so that they do not: (15)(16)(17)</p> <ul style="list-style-type: none"> - generate extreme heat or pressure, fire or explosion, or violent reaction - produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health - produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosion - damage the structural integrity of the device or facility - threaten human health by any other like means. <p>(NOTE: Check for hydrocarbons in acid drums and other incompatible wastes as listed in Appendix 4-6.)</p> <p>Verify that hazardous wastes are not placed in an unwashed container that previously held an incompatible waste or material. (15)(16)(17)</p> <p>Verify that containers holding hazardous wastes incompatible with wastes stored nearby in other containers, open tanks, piles, or surface impoundments are separated or protected from each other by a dike, berm, wall, or other device. (15)(16)(17)</p> |
| <p>...</p> <p>4-94. Containers of hazardous waste at TSDFs should be managed properly (GMP).</p> <p>...</p> | <p>Inspect containers and storage areas to determine the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - containers of highly flammable wastes are electrically grounded (check for clips and wires and make sure wires lead to ground rod or system) - at least 3 ft [0.91 m] of aisle space is provided between rows of containers. <p>...</p> |
| <p>ALL TSDFs - Container Storage Areas</p> <p>4-95. Containers at TSDFs should be kept in designated storage areas (GMP).</p> <p>...</p> | <p>Verify that all containers are identified and stored in appropriate areas. (15)(16)(17)</p> <p>(NOTE: Any unidentified contents of solid waste containers and/or containers not in designated storage areas must be tested to determine if solid or hazardous waste requirements apply.)</p> <p>...</p> |

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| <p>4-96. Containers holding ignitable or reactive waste must be located 15 cm (50 ft) from the property line of a TSDF (40 CFR 264.176 and 265.176).</p> <p style="text-align: center;">...</p> <p>4-97. TSDF personnel must conduct weekly inspections of container storage areas (40 CFR 264.174 and 265.174).</p> <p style="text-align: center;">...</p> <p>ALL TSDFs - Tank Systems</p> <p>4-98. Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at TSDFs (40 CFR 264.190 (a), 264.190(b), 264.193 (a), 265.190(a), 265.190 (b), and 265.193(a)).</p> <p style="text-align: center;">...</p> | <p>Determine the distance from any storage containers to the property line. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that inspections are conducted at least weekly to look for leaking containers and signs of deterioration of containers. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that the following types of tanks used to store or treat hazardous waste have secondary containment: (8)(15)(16)(17)</p> <ul style="list-style-type: none"> - all new tank systems or components - all existing tank systems used to store or treat USEPA Hazardous Waste No. F020, F021, F022, F023, F026 and F027 - existing tank systems of known documented age that are 15 yr of age. <p>Verify that existing tank systems for which the age cannot be determined within 8 yr of 12 January 1987 and that are at a facility older than 7 yr, are provided with secondary containment by time the facility reaches 15 yr of age or by 12 January 1989, whichever comes later. (8)(15)(16)(17)</p> <p>(NOTE: The following are exempt from these requirements:</p> <ul style="list-style-type: none"> - tank systems used to store or treat hazardous waste that contains no free liquids and situated inside a building with an impermeable floor - tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.) <p style="text-align: center;">...</p> |

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| <p>4-99. Secondary containment on tank systems at TSDFs must meet specific requirements (40 CFR 264.190(a), 264.193 (b) through 264.193(d), 265.190(a), and 265.193 (b) through 265.193(d)).</p> | <p>Verify that secondary containment meets the following criteria: (2)(5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is designed, installed, and operated to prevent the migration of liquid out of the system - it is capable of detecting and collecting releases and accumulated liquids until removal is possible - it is constructed of or lined with materials compatible with the wastes - it is placed on a foundation or base that can provide appropriate support and prevent failure as a result of settlement, compression, or upset - a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time - it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation. <p>Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. (2)(5)(7)(8)(10)(15)(16)(17)</p> <p>Verify that secondary containment for tanks includes one or more of the following: (2)(5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - a liner (external to the tank) - a vault - a double-walled tank - an equivalent approved device. <p>(NOTE: Tank systems used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> |

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| <p>4-100. External liners, vaults, and double-walled tanks at TSDFs are required to meet specific standards (40 CFR 264.190(a), 264.193(e), 265.190(a), and 265.193(e)).</p> | <p>Verify that the external liner system meets the following requirements: (5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained - it prevents run-on and infiltration of precipitation into the secondary containment, unless the collection system has sufficient capacity to handle run-on or infiltration - it is free of cracks or gaps - it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release - the capacity is sufficient to contain precipitation from a 25-yr. 24-h rainfall event. <p>Verify that the vault system meets the following criteria. (5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - it will contain 100 percent of the capacity of the largest tank within its boundary - it prevents run-on and infiltration of precipitation, unless there is sufficient excess capacity - it is constructed with chemical-resistant water stops at all joints - it has an impermeable interior coating that is compatible - it has a means to protect against the formation of and ignition of vapors within the vault if the waste is ignitable or reactive - it has an exterior moisture barrier or is otherwise operated to prevent migration of moisture into the vault. <p>Verify that the double-walled tank meets the following criteria: (5)(7)(8)(10)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is designed as an integral structure so that any release is contained by the outer shell - it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal - it has a builtin continuous leak detection system capable of detecting a release within 24 h. <p>(NOTE: Tank systems used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> |

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| <p>4-101. Tank ancillary equipment at TSDFs must also be provided with secondary containment (40 CFR 264.190(a), 264.193(f), 265.190(a), and 265.193(f)).</p> <p style="text-align: center;">...</p> | <p>Verify that ancillary equipment, except for the following, has secondary containment: (15)(16)(17)</p> <ul style="list-style-type: none"> - aboveground piping that is visually inspected for leaks on a daily basis - welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis - sealless or magnetic coupling pumps and sealless valves that are visually inspected for leaks on a daily basis - pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> <p style="text-align: center;">...</p> |
| <p>4-102. Tank systems at TSDFs that are required to have secondary containment that do not have secondary containment must meet specific requirements (40 CFR 264.190(a), 264.191(a) through 264.191(c), 264.193(i), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).</p> <p style="text-align: center;">...</p> | <p>Verify that tank systems without secondary containment meet the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - for nonenterable underground tanks, a leak test is conducted annually - for other than nonenterable underground tanks, either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered, professional engineer - for ancillary equipment, a leak test or other approved integrity assessment is done at least annually. <p>Verify that the facility maintains a record of the results of testing and assessments. (15)(16)(17)</p> <p>Verify that tank systems that store or treat materials that become hazardous waste after 14 July 1986 are assessed within 12 mo after the waste becomes hazardous. (15)(16)(17)</p> <p>(NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)</p> <p style="text-align: center;">...</p> |
| <p>4-103. TSDFs with new tank systems must submit to the Regional Administrator a written assessment review certified by an independent, qualified, registered, professional engineer and install the tank according to specific standards (40 CFR 264.192 and 265.192).</p> | <p>Determine if the TSDF has any new tank systems. (15)(16)(17)</p> <p>Verify that when the tanks are installed they are handled so as to prevent damage to the tank and that any backfill material used is a noncorrosive, porous, homogeneous substance. (15)(16)(17)</p> <p>Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank. (15)(16)(17)</p> |

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| <p>4-104. Tanks used for hazardous waste treatment or storage at TSDFs must follow certain operating requirements (40 CFR 264.194 and 265.194).</p> <p>...</p> <p>4-105. Tank systems at TSDFs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 264.198, 264.199, 265.198, and 265.199).</p> <p>...</p> | <p>Verify that hazardous wastes or treatment reagents are not placed in tanks if they might cause the tank system (including ancillary equipment or containment system) to fail. (15)(16)(17)</p> <p>Verify that appropriate measures are taken to prevent overfill, including: (15)(16)(17)</p> <ul style="list-style-type: none"> - spill prevention controls - overfill prevention controls - maintenance of sufficient freeboard to prevent overtopping by wave, wind action, or precipitation for uncovered tanks. <p>...</p> <p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: (15)(16)(17)</p> <ul style="list-style-type: none"> - waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met - waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react - tank system is used solely for emergencies. <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's <i>Flammable and Combustible Liquids Code</i> are maintained. (15)(16)(17)</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same tank system, unless minimum safety requirements are met. (15)(16)(17)</p> <p>Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless minimum safety requirements are met. (15)(16)(17)</p> <p>...</p> |

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| <p>4-106. Personnel at TSDFs must conduct inspections of tank systems and associated equipment (40 CFR 264.195 and 265.195).</p> <p style="text-align: center;">...</p> | <p>Verify that a schedule and procedure has been developed and is followed to inspect overfill controls at permitted facilities. (15)(16)(17)</p> <p>Determine if inspections of the following are conducted at least once a day: (15)(16)(17)</p> <ul style="list-style-type: none"> - data is gathered from monitoring and leak detection equipment - overfill/spill control equipment at interim state facilities to ensure it is in good working order - aboveground portions of the tank to detect corrosion or releases - tank monitoring equipment (e.g., pressure and temperature gauges) - area surrounding tank, including the secondary containment system, for signs of leakage (wet spots, dead vegetation). <p>Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter. (15)(16)(17)</p> <p>Verify that all sources of impressed current are inspected and/or tested every other month. (15)(16)(17)</p> <p>Verify that inspections are documented. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-107. Tank systems or secondary containment systems at TSDFs, from which there has been a leak or spill or that have been declared unfit for use, must be removed from service immediately, and specific requirements must be met (40 CFR 264.196 and 265.196).</p> <p style="text-align: center;">...</p> | <p>Verify that the following steps are taken: (15)(16)(17)</p> <ul style="list-style-type: none"> - the flow or addition of hazardous wastes to the tank is stopped - the hazardous waste is removed from the tank: <ul style="list-style-type: none"> - within 24 h of detection (or other reasonable time as demonstrated by the owner/operator), remove as much waste from the tank as necessary to prevent further release and allow inspection and repair - within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment), remove waste released to the secondary containment system - a visual inspection of the release is done and: <ul style="list-style-type: none"> - action is taken to prevent further migration to soils, surface water, or groundwater - any visible contamination of soil and surface water is removed and disposed of. <p>Verify that notification is made to the Regional Administrator within 24 h for any release to the environment. (15)(16)(17)</p> <p>Verify that a report is submitted within 30 days. (15)(16)(17)</p> <p>(NOTE: Releases of 1 lb [0.453 kg] or less that are immediately contained and cleaned up are exempt from reporting.)</p> <p>Verify that the tank and/or secondary containment is repaired before its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>4-108. TSDFs are required to follow specific procedures when closing a tank system (40 CFR 264.197(a), 264.197(b), 265.197(a), and 265.197(b)).</p> <p>...</p> <p>ALL TSDFs - Containment Buildings</p> <p>4-109. Facilities with containment buildings that are in compliance are not subject to the definition of land disposal if specific requirements are met (40 CFR 264.1100 and 265.1100).</p> <p>...</p> | <p>Determine if the TSDF has closed any tank systems. (2)(5)(15)(16)(17)</p> <p>Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated. (2)(5)(15)(16)(17)</p> <p>Verify that if it is not possible and/or practicable to remove or decontaminate all soils, the facility closes the tank and performs postclosure care, as is required for landfills. (2)(5)(15)(16)(17)</p> <p>...</p> <p>(NOTE: According to the <i>Background Information</i> published on page 37221 of the 18 August 1992 edition of the <i>Federal Register</i>, a hazardous waste containment building involves "the management of a hazardous waste inside a unit designed and operated to contain the hazardous waste within the unit." This is not a building that holds drums or tanks filled with hazardous waste, but a building that holds the hazardous waste itself.)</p> <p>Verify that the containment building meets the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - it is a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit - it is designed to prevent failure as a result of pressure gradients, settlement, compression, uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations - it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel and wastes and the handling of equipment within the unit - if the unit is used to manage liquids: <ul style="list-style-type: none"> - there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier - there is a liquid collection system, designed and constructed of materials to minimize the accumulation of liquid on the primary barrier - there is a secondary containment system designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time - it has controls sufficient to prevent fugitive dust emissions - it is designed and operated to ensure containment and prevent the tracking of materials from the unit by personnel and equipment. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-110. Containment buildings are required to be designed according to specific standards (40 CFR 264.1101(a)(1) through 264.1101(a)(2), and 264.1101(b), 265.1101(a)(1) through 265.1101(a)(2), and 265.1101(b)).</p> | <p>Verify that the containment building meets the following design standards: (2)(5)(7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is completely enclosed with a floor, walls, and a roof to prevent exposure to the elements and to assure containment of wastes - the floor and containment walls, including any required secondary containment system, are designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and any personnel and heavy equipment that operate within the unit - it is designed to prevent failure as a result of pressure gradients, settlement, compression, uplift, physical contact with the hazardous wastes, climatic conditions, and the stress of daily operations - it has sufficient structural strength to prevent collapse or other failure - all surfaces in contact with hazardous wastes are compatible with the wastes - it has a primary barrier that is designed to be sufficiently durable to withstand the movement of personnel and wastes and the handling of equipment within the unit and is appropriate for the chemical and physical characteristics of the waste. <p>Verify that if the containment building is going to manage hazardous wastes that have free liquids or have been treated with free liquids, the following design requirements are also met: (2)(5)(7)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - there is a primary barrier designed and constructed of materials to prevent migration of hazardous constituents into the barrier (e.g., a geomembrane covered by a concrete wear surface) - there is a liquid collection and removal system designed and constructed of materials to minimize the accumulation of liquid on the primary barrier: <ul style="list-style-type: none"> - the primary barrier is sloped to drain liquids to the associated collection system - liquids and wastes are collected and removed at the earliest practicable time to minimize hydraulic head on the containment system - there is a secondary containment system, including a secondary barrier, designed and constructed of materials to prevent migration of hazardous constituents into the barrier, with a leak detection and liquid collection system capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-110. (continued)</p> | <ul style="list-style-type: none"> - the leak detection component of the secondary containment system meets the following: <ul style="list-style-type: none"> - it is constructed with a bottom slope of 1 percent or more - it is constructed of granular drainage materials with a hydraulic conductivity of 1×10^{-2} cm/s [3.94×10^{-3} in./s] or more and a thickness of 12 in. [30.5 cm] or more, or constructed of synthetic or geonet drainage materials with a transmissivity of 3×10^{-5} m²/s [3.23×10^{-4} ft²/s] or more - if treatment is to be conducted in the building, the treatment area is designed to prevent the release of liquids, wet materials, or liquid aerosols to other portions of the building - the secondary containment system is constructed of materials that are chemically resistant to the waste and liquids managed in the building and of sufficient strength and thickness to prevent collapse under pressure exerted by overlaying materials and any equipment used. <p>(NOTE: An exception to the structural strength requirement may be made for light-weight doors and windows based on the nature of the waste management operations if the following criteria are met:</p> <ul style="list-style-type: none"> - the doors and windows provide an effective barrier against fugitive dust emissions - the unit is designed and operated in a manner that ensures that the waste will not come in contact with the doors or windows.) <p>(NOTE: A containment building can serve as a secondary containment system for tanks within the building if:</p> <ul style="list-style-type: none"> - it meets the requirements of 264.193(d)(1) (see checklist item 4-99) - it meets the requirements of 264.193(b) and 264.193(c)(1) through 264.193(c)(2) (see checklist item 4-99).) |

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| <p>4-111. Containment buildings are required to be operated according to specific standards (40 CFR 264.1101(a)(3), 264.1101(c)(1), 264.1101(c)(4), 265.1101(a)(3), 265.1101(c)(1), and 265.1101(c)(4)).</p> | <p>Verify that incompatible wastes or treatment reagents are not placed in the building or its secondary containment system if they could cause the unit or the secondary containment system to leak, corrode, or otherwise fail. (15)(16)(17)</p> <p>Verify that the following operational procedures are done: (15)(16)(17)</p> <ul style="list-style-type: none"> - controls and practices are used to ensure the containment of the waste within the building - the primary barrier is maintained so that it is free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier - the level of the stored/treated hazardous waste is maintained so that the height of any containment wall is not exceeded - measures are implemented to prevent the tracking of hazardous waste out of the unit by personnel or equipment used in the handling of the waste - there is a designated area for the decontamination of equipment and collection of rinsate - any collected rinsate is managed as needed according to its constituents - measures are implemented to control fugitive dust emissions so that no openings exhibit visible emissions - particulate collection devices are maintained and operated according to sound air pollution control practices. <p>Verify that data is gathered from monitoring and leak detection equipment, and the site is inspected at least once every 7 days, and the results are recorded in the operating record. (15)(16)(17)</p> |

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| <p>4-112. Containment buildings are required to be certified by a registered, professional engineer (40 CFR 264.1101(c)(2) and 265.1101(c)(2)).</p> <p style="text-align: center;">...</p> | <p>Verify that the building has been certified by a registered professional engineer. (2)(5)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-113. Leaks in containment buildings must be repaired and reported (40 CFR 264.1101(c)(3) and 265.1101(c)(3)).</p> <p style="text-align: center;">...</p> | <p>Verify that if a condition is detected that could lead to a leak or has already caused a leak, it is repaired promptly. (15)(16)(17)</p> <p>Verify that when a leak is discovered: (15)(16)(17)</p> <ul style="list-style-type: none"> - the discovery is recorded in the facility operating record - the portion of the containment building that is affected is removed from service - a cleanup and repair schedule is established - within 7 days, the Regional Administrator is notified, and within 14 working days, written notice is provided to the Regional Administrator - the Regional Administrator is notified upon the completion of all repairs and certification from a qualified, registered, professional engineer is also submitted. <p style="text-align: center;">...</p> |
| <p>4-114. Containment buildings that have areas both with and without secondary containment must meet specific requirements (40 CFR 264.1101(d) and 265.1101(d)).</p> <p style="text-align: center;">...</p> | <p>Verify that each area is designed and operated according to the appropriate requirements. (15)(16)(17)</p> <p>Verify that measures are taken to prevent the release of liquids or wet materials into areas without secondary containment. (15)(16)(17)</p> <p>Verify that a written description is maintained in the facility operating log of operating procedures used to maintain the integrity of areas without secondary containment. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>4-115. When a containment building is closed, specific requirements must be met (40 CFR 264.1102 and 265.1102).</p> <p>...</p> <p>ALL TSDFs - Emissions from Process Vents</p> <p>4-116. Facilities with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppm are required to meet specific standards (40 CFR 264.1030(b), 264.1032, 265.1030(b), and 265.1032).</p> <p>...</p> | <p>Determine if the facility has closed a containment building recently. (2)(13)(15)(16)(17)</p> <p>Verify that at closure, all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate were removed or decontaminated. (2)(13)(15)(16)(17)</p> <p>Verify that the containment building is closed in accordance with closure and postclosure requirements for TSDFs as outlined in the checklist items of the sections titled <i>ALL TSDFs - Documentation</i> and <i>ALL TSDFs - Closure</i>. (2)(13)(15)(16)(17)</p> <p>Verify that if not all contaminated subsoils can be practicably removed or decontaminated, the facility is closed and landfill post-closure requirements are implemented. (2)(13)(15)(16)(17)</p> <p>...</p> <p>Verify that one of the following is met: (15)(16)(17)</p> <ul style="list-style-type: none"> - total organic emissions from the process vents do not exceed 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr) - total organic emissions are reduced, by use of a control device, from all process vents by 95 percent weight. <p>(NOTE: These standards apply to:</p> <ul style="list-style-type: none"> - TSDFs that are required to have a permit - hazardous waste recycling units that are located on a hazardous waste management facility that is required to have a permit.) <p>...</p> |

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| <p>4-117. At facilities using a closed vent system and control device to meet the standards for total organic emissions, the closed vent system and control device must meet certain minimum requirements (40 CFR 264.1033 and 265.1033).</p> <p>...</p> | <p>Verify that control devices involving vapor recovery are designed and operated to recover the organic vapors vented to the air with an efficiency of 95 weight percent or greater, unless the total organic emission limit can be attained at an efficiency of less than 95 weight percent. (15)(16)(17)</p> <p>Verify that if an enclosed combustion device (i.e., vapor incinerator, boiler, or process heater) is used, it is designed and operated to reduce the organic emissions vented to it by 95 weight percent or greater, to achieve a total organic compound concentration of 20 ppm or to provide a minimum residence time of 0.50 s at a minimum temperature of 760 °C [1400 °F]. (15)(16)(17)</p> <p>Verify that if a boiler or process heater is used as the control device, the vent stream is introduced into the flame zone of the process heater's boiler. (15)(16)(17)</p> <p>Verify that if flares are used: (15)(16)(17)</p> <ul style="list-style-type: none"> - they are designed and operated with no visible emissions except for periods not in excess of 5 min during any 2 consecutive hours - they are operated with a flame present at all times - they are used only if the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam assisted or air assisted - those that are nonassisted have a net heating value of the gas being combusted of 7.45 MJ/scm (200 Btu/scf) or greater - those that are nonassisted or steam assisted have an exit velocity less than 18.3 m/s (60 ft/s), except when the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1000 Btu/scf) and the exit velocity is equal to or greater than 18.3 m/s (60 ft/s) but less than 122 m/s (400 ft/s). <p>Verify that each monitor and control device is inspected on a routine basis. (15)(16)(17)</p> <p>...</p> |
| <p>4-118. TSDFs are required to maintain specific records pertaining to process vent emissions (40 CFR 264.1035 and 265.1035).</p> <p>...</p> | <p>Verify that the following information is kept in the operating record: (15)(16)(17)</p> <ul style="list-style-type: none"> - an implementation schedule - up-to-date documentation of compliance - the test plan if test data is used to determine the organic removal efficiency or total organic compound concentration achieved by a control device - design documentation - monitoring and inspection results - notations of exceedances. <p>Verify that records of monitoring operations and inspection information are kept for 3 yr. (15)(16)(17)</p> <p>...</p> |

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| <p>ALL TSDFs - Air Emission Standards for Equipment Leaks</p> <p>4-119. TSDFs with pumps in light liquid service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1052, 265.1050(b), and 265.1052).</p> | <p>Verify that pumps in light liquid service are monitored monthly, according to designated reference methods, and inspected visually each week. (15)(16)(17)</p> <p>(NOTE: A leak is detected if there is an instrument reading of 10,000 ppm or greater or if there is an indication of liquid dripping from the pump seal.)</p> <p>Verify that when a leak is detected, the first attempt at repair is made within 5 calendar days and repair is completed within 15 calendar days. (15)(16)(17)</p> <p>(NOTE: Pumps equipped with dual mechanical seal systems and pumps designated for no detectable emissions that meet standards outlined below do not have to be monitored monthly or visually checked weekly.)</p> <p>Verify that pumps equipped with a dual mechanical seal system meet the following design and operation requirements: (15)(16)(17)</p> <ul style="list-style-type: none"> - the dual mechanical seal system is operated with barrier fluid at a pressure that is at all times greater than the pump stuffing box, or equipped with a barrier fluid degassing reservoir that is connected by a closed vent system to a control device, or equipped with a system that purges the barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere - the barrier fluid system is not a hazardous waste with organic concentrations 10 percent or greater by weight - the barrier fluid system is equipped with a sensor that will detect failure if the seal is broken - pumps are checked by visual inspection weekly - sensors are checked daily or equipped with an audible alarm that is checked monthly. <p>Verify that pumps that are designated for no detectable emissions, as indicated by an instrument reading, of 500 ppm above background or less, meet the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - they are operated with no detectable emissions - they are tested for compliance initially upon designation, annually, and at other times as requested by the Regional Administrator. <p>(NOTE: Any pump that is equipped with a closed vent system capable of capturing and transporting leakage from the seal or seals to a control device is exempt from these requirements.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and to hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-120. TSDFs with compressors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1053, 265.1050(b), and 265.1053).</p> | <p>Verify that each compressor is equipped with a seal system that includes a barrier fluid system and that prevents leakage of total organic emissions to the atmosphere, except if: (15)(16)(17)</p> <ul style="list-style-type: none"> - if it is equipped with a closed vent system capable of capturing and transporting any leakage from the seal with a control device - it is designated for no detectable emissions and: <ul style="list-style-type: none"> - operates at an instrument reading of less than 500 ppm above background - is tested for compliance initially upon designation, annually, and at times as requested by the Regional Administrator. <p>Verify that the compressor seal system meets one of the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - it is operated with the barrier fluid at a pressure that is at all times greater than the compressor stuffing box pressure - it is equipped with a barrier fluid system that is connected to a closed vent system to a control device - it is equipped with a system that purges that barrier fluid into a hazardous waste stream with no detectable emissions to the atmosphere. <p>Verify that the barrier fluid is not a hazardous waste with organic concentrations of 10 percent or greater by weight. (15)(16)(17)</p> <p>Verify that each barrier fluid system is equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both. (15)(16)(17)</p> <p>Verify that each sensor is checked daily or that it is equipped with an audible alarm that is checked monthly. (15)(16)(17)</p> <p>(NOTE: Sensors on compressors located within the boundary of an unmanned site must be checked daily.)</p> <p>Verify that when a leak is detected, the first attempt at repair is made within 5 calendar days and the repair is made with 15 calendar days. (15)(16)(17)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and to hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> |

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| <p>4-121. TSDFs with pressure relief devices in gas/vapor service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1054, 265.1050(b), and 265.1054).</p> <p>...</p> <p>4-122. TSDFs with sampling connecting systems that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1055, 265.1050(b), and 265.1055).</p> <p>...</p> | <p>Verify that except during pressure releases, each pressure relief device in gas/vapor service is operated with no detectable emissions, as indicated by an instrument reading, of less than 500 ppm above background. (15)(16)(17)</p> <p>Verify that if there is a pressure release, the device is returned to a no detectable emissions status within 5 calendar days and the device is monitored to ensure compliance. (15)(16)(17)</p> <p>(NOTE: Any pressure relief device equipped with a closed vent system capable of capturing and transporting leakage from the pressure relief device to a control device is exempt from these requirements.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and to hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> <p>...</p> <p>Verify that each sampling connection system is equipped with a closed purge system or closed vent system. (15)(16)(17)</p> <p>Verify that each closed purge system or closed vent system does one of the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - returns the purged hazardous waste stream directly to the hazardous waste management process line with no detectable emissions to the atmosphere - collects and recycles the purged hazardous waste stream with no detectable emissions to the atmosphere - is designed and operated to capture and transport all the purged hazardous waste stream to a control device. <p>(NOTE: Insitu sampling systems are exempt from these requirements.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and to hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> <p>...</p> |

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| <p>4-123. TSDFs with open ended valves or lines that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1056, 265.1050(b), and 265.1056).</p> | <p>Verify that each open ended valve or line is equipped with a cap, blind flange, plug, or second valve. (15)(16)(17)</p> <p>Verify that the cap, blind flange, plug, or second valve seals the open end at all times, except during operations requiring hazardous waste stream flow through the open ended valve of line. (15)(16)(17)</p> <p>Verify that each open ended valve of line equipped with a second valve is operated so that the valve on the hazardous waste stream end is closed before the second valve is closed. (15)(16)(17)</p> <p>Verify that when a double block and bleed system is being used, the bleed valve is shut or plugged, except during operations that require venting the line between the block valves. (15)(16)(17)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and to hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> |
| <p>4-124. TSDFs with valves in gas/vapor service or light liquid service that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1057, 264.1061, 265.1050(b), 265.1057, and 265.1061).</p> | <p>Verify that valves in gas/vapor service or light liquid service are monitored monthly to detect leaks. (15)(16)(17)</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured. But, if a leak is not detected for 2 consecutive months, monitoring may be cut back to quarterly until a leak is detected.)</p> <p>Verify that the first attempt at repairing a leak is done with 5 calendar days after detection and leak repair is completed within 15 days after detection. (15)(16)(17)</p> <p>(NOTE: Valves that are designated for no detectable emissions, as indicated by an instrument reading, of less than 500 ppm above background do not have to be monitored monthly if the valve:</p> <ul style="list-style-type: none"> - has no external actuating mechanism in contact with the hazardous waste stream - is operated with emissions of less than 500 ppm above background - is tested initially upon designation, then annually, and at the request of the Regional Administrator.) |

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| <p>4-124. (continued)</p> | <p>(NOTE: Valves that are designated as unsafe-to-monitor are exempt from the requirement for monthly monitoring if:</p> <ul style="list-style-type: none"> - the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger - a written monitoring plan is followed that requires monitoring as often as is reasonably practicable during safe-to-monitor times.) <p>(NOTE: Valves that are designated as difficult-to-monitor are exempt from monthly monitoring requirements if:</p> <ul style="list-style-type: none"> - the valve cannot be monitored without elevating the monitoring personnel more than 2 m [6.56 ft] above a support surface - the hazardous waste management unit within which the valve is located was in operation before 21 June 1990 - a written monitoring plan is followed that requires the monitoring of the valve at least once per calendar year.) <p>(NOTE: The facility may elect to have all valves within a hazardous waste management unit comply with an alternative standard of no greater than 2 percent of the valves to leak.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> |
| <p>4-125. TSDFs with pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors that contain or contact hazardous wastes with organic concentrations of at least 10 percent by weight are required to meet specific standards (40 CFR 264.1050(b), 264.1058, 265.1050(b), and 265.1058).</p> | <p>Verify that pumps and valves in heavy liquid service, pressure relief devices in light liquid service or heavy liquid service, and other connectors are required to be monitored within 5 days if evidence of a potential leak is found by a visual, olfactory, audible, or other detection method. (15)(16)(17)</p> <p>(NOTE: A leak is detected if an instrument reading of 10,000 ppm or greater is measured.)</p> <p>Verify that when a leak is detected, the first attempt at repair occurs within 5 days and repair is done within 15 days after discovery. (15)(16)(17)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and to hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-126. TSDFs are required to keep specific records pertaining to the valves, pumps, pressure relief devices, and connecting systems being monitored for leaks and to submit certain reports (40 CFR 264.1050(b), 264.1064, 264.1065, 265.1050(b), and 265.1064).</p> | <p>Verify that the following information is maintained in the facility operating record: (15)(16)(17)</p> <ul style="list-style-type: none"> - equipment ID No. and hazardous management unit identification - approximate locations - type of equipment - percent-by-weight total organics in the hazardous waste stream at the equipment - hazardous waste state at the equipment (gas, liquid, vapor) - method of compliance - implementation schedule if needed - performance plan for control devices as needed - documentation of compliance - documentation of repair. <p>Verify that permitted TSDFs submit a semiannual report, indicating leaks and repairs, to the Regional Administrator. (15)(16)(17)</p> <p>(NOTE: A report to the Regional Administrator is not required if repairs are made and the control device does not exceed or operate outside of the design specifications for more than 24 h.)</p> <p>(NOTE: These standards apply to facilities that are required to have a permit and to hazardous waste recycling units that are located on hazardous waste management facilities that are required to have a permit.)</p> |

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| <p>ALL TSDFs - Documentation Requirements</p> <p>4-127. Facilities that treat, store, or dispose of hazardous wastes must develop and follow a written waste analysis plan (40 CFR 264.13(b), 264.13(c), 265.13(b), and 265.13(c)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility treats, stores, or disposes of hazardous waste. (15)(16)(17)</p> <p>Verify that the facility has a waste analysis plan. (15)(16)(17)</p> <p>Verify that the facility is following the waste analysis plan by comparing the plan and records of actual procedures. (15)(16)(17)</p> <p>Verify that the waste analysis plan contains the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - testing parameters for which each hazardous waste will be analyzed - test methods - sampling methods used to obtain a representative sample - frequency with which the analysis will be reviewed or repeated to ensure that the analysis is up-to-date and accurate - waste analysis supplied by offsite generators - statements (if applicable) of methods used to meet the additional analysis requirements for ignitable, reactive, or incompatible materials, bulk and containerized liquids, and incineration - additional information as follows for offsite facilities: <ul style="list-style-type: none"> - specific procedures used inspect (and analyze if necessary) the movement of hazardous waste received to ensure that it matches the identity of the waste designated in the manifest - the method of sampling used to obtain a representative sample (if the identification method includes sampling) - the procedures that an offsite landfill receiving containers of hazardous waste will use to determine if a hazardous waste generator or treater has added a biodegradable sorbent to the waste in the container. <p style="text-align: center;">...</p> |

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| <p>4-128. TSDFs must have a formal written inspection schedule and a log of inspection results (40 CFR 264.15 and 265.15).</p> <p>...</p> <p>4-129. TSDFs must have a contingency plan (40 CFR 264.50 through 264.54 and 265.50 through 265.54).</p> <p>...</p> | <p>Verify that the facility has a formal written inspection schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards. (15)(16)(17)</p> <p>Verify that the schedule is kept at the facility and lists types of problems to be looked for at the facility. (15)(16)(17)</p> <p>Verify that areas subject to spills, such as loading and unloading areas, are inspected daily when in use. (15)(16)(17)</p> <p>Verify that logs or records of the inspections are kept for 3 yr and include the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - date and time of the inspection - name of the inspector - notation of the observations made - date and nature of any repairs or other remedial actions. <p>...</p> <p>(NOTE: TSDFs may be addressed in the facility's SPC Plan or other emergency plan or, if none exists, in a separate contingency plan.)</p> <p>Verify that the contingency plan is designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents. (15)(16)(17)</p> <p>Verify that the plan includes the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - a description of actions to be taken during an emergency - a description of arrangements made with local police departments, fire departments, hospitals, contractors, and state and local emergency response teams - the names, addresses, and phone numbers of all people qualified to act as emergency coordinator - a list of all emergency equipment at the facility, where this equipment is required and located, and what it looks like - an evacuation plan for facility personnel where there is a possibility evacuation would be needed. <p>Verify that copies of the contingency plan are maintained at the TSDF and submitted to organizations that may be called upon to provide emergency services. (15)(16)(17)</p> <p>Verify that the contingency plan is routinely reviewed and updated, especially when: the facility is issued a new permit, the plan fails in an emergency, the emergency coordinators change, the waste being handled changes, and/or the list of emergency equipment changes. (15)(16)(17)</p> <p>...</p> |

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| <p>4-130. TSDF operators must record the time, date, and details of any incident that requires implementation of the contingency plan (40 CFR 264.56(j) and 265.56(j)).</p> <p style="text-align: center;">...</p> <p>4-131. TSDF operators must keep written operating records at the facility (40 CFR 264.73 through 264.74 and 265.73 through 265.74).</p> <p style="text-align: center;">...</p> | <p>Determine, by reviewing TSDF operating records, if incidents have been recorded and corrective actions taken. (15)(16)(17)</p> <p>Verify that written reports have been submitted to the USEPA Regional Administrator within 15 days after the incident. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that the facility has a written operating record. (15)(16)(17)</p> <p>Determine if the operating record includes: (15)(16)(17)</p> <ul style="list-style-type: none"> - a description and quantity of each hazardous waste received at the facility and the method(s) and date(s) of treatment, storage, or disposal of each waste received at the facility - the location of each hazardous waste within the facility (cross-referenced to specific manifest document numbers and the quantity at each location) - for disposal facilities, the location and quantity recorded on a map or diagram of each cell or disposal area - records and results of waste analyses - reports of all the incidents that required the implementation of the contingency plan - records and results of inspections (only a 3-yr retention period) - monitoring, testing, and analytical data (where required) - for offsite facilities, notices to the generator - annual certification that the facility has a program in place to reduce the volume and toxicity of hazardous waste, and that the proposed method of treatment, storage, or disposal minimizes the present and future threat to human health and the environment - the record of the quantities and date of placement for each shipment of hazardous waste placed in land disposal units under an extension granted by 40 CFR 268.5, a petition granted under 40 CFR 268.6, or a certification granted under 40 CFR 268.8 - a copy of the applicable notice, demonstration, and certification required for any restricted hazardous wastes - certifications and demonstrations provided to generators or received from generators. <p>(NOTE: This information must be recorded in the operating record until closure of the facility.)</p> <p style="text-align: center;">...</p> |

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| <p>4-132. TSDFs must prepare and submit a single copy of a biennial report to the USEPA Regional Administrator by 1 March of each even numbered year (40 CFR 264.75 and 265.75).</p> <p>...</p> | <p>Obtain a copy of the biennial report (USEPA Form 8700-13D or applicable state form). (5)(15)(16)(17)</p> <p>Verify that biennial reports are prepared and submitted and contain the following information: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - USEPA ID No. - facility name and address - calendar year covered by report - description and quantity of each waste received - method of treatment, storage, or disposal for each waste - certification signed by owner or operator of the facility - for offsite facilities, the USEPA ID No. for each hazardous waste generator from which waste was received - description of efforts undertaken during the year to reduce the volume and toxicity of waste generated - description of changes in volume and toxicity of waste actually achieved during the year in comparison to previous years to the extent that information is available for the years before 1984. <p>...</p> |
| <p>4-133. TSDFs must have a written closure plan for each facility (40 CFR 264.110, 264.112(a), 264.112(b), 265.110, 265.112(a), and 265.112(b)).</p> <p>...</p> | <p>Determine if the facility has a written closure plan. (15)(16)(17)</p> <p>Determine, by review, if the closure plan addresses: (15)(16)(17)</p> <ul style="list-style-type: none"> - how the facility will be closed - estimates of the maximum amount of wastes in storage and treatment during the life of the facility - a description of decontamination procedures to be used during closure - a schedule for closure of each unit. <p>...</p> |
| <p>4-134. Facilities with hazardous waste disposal units are required to have a written postclosure plan (40 CFR 264.110(b), 264.118, 265.110(b), and 265.118(a) through 265.118(d)).</p> <p>...</p> | <p>Verify that the plan includes the following information: (15)(16)(17)</p> <ul style="list-style-type: none"> - the activities that will be carried on after closure of each disposal unit and the frequency of these activities - name, address, and phone number of the person or office to contact during postclosure care. <p>Verify that the plan is amended if there is a change in: the expected year of final closure, events that occur during the life of the facility that impact closure care, or a change in facility design. (15)(16)(17)</p> <p>(NOTE: These requirements apply to the following:</p> <ul style="list-style-type: none"> - all hazardous waste disposal facilities - waste piles and surface impoundments from which the owner or operator intends to remove the wastes at closure - tank systems that are required to meet the requirements for landfills - as of 18 February 1993, containment buildings that are required to meet the requirements for landfills.) <p>...</p> |

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| <p>4-135. TSDFs that receive waste from offsite sources must comply with manifest requirements (40 CFR 264.70, 264.71, 265.70, and 265.71).</p> <p>...</p> <p>4-136. TSDFs receiving hazardous waste from a foreign source must notify the Regional Administrator (40 CFR 264.12(a) and 265.12(a)).</p> <p>...</p> <p>4-137. TSDFs that receive waste from offsite sources are required to attempt to resolve manifest discrepancies when they occur (40 CFR 264.72 and 265.72).</p> <p>...</p> | <p>Determine if the facility receives waste from offsite sources. (15)(16)(17)</p> <p>Determine, by reviewing a random number of manifests, if manifests contain the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - proper signature - date of receipt. <p>Verify that a copy was sent to the generator within 30 days of receipt of waste. (15)(16)(17)</p> <p>Verify that copies are retained at the facility for 3 yr. (15)(16)(17)</p> <p>Verify that exclusion certification from CESQGs is kept on file. (15)(16)(17)</p> <p>...</p> <p>Verify that notification is sent in writing at least 4 weeks before delivery is expected. (15)(16)(17)</p> <p>...</p> <p>Determine if significant discrepancies exist between the quantity or type of waste designated on the manifest or shipping paper and the quantity or type of waste the facility received. (15)(16)(17)</p> <p>Verify that, on discovery of a significant discrepancy, an attempt was made to reconcile the discrepancy with the generator and/or the transporter. (15)(16)(17)</p> <p>Verify that if the discrepancy could not be resolved within 15 days after receipt of the waste, the Regional Administrator was notified by mail and the following was included: (15)(16)(17)</p> <ul style="list-style-type: none"> - a letter describing the discrepancy and the attempts to reconcile it - copy of the manifest or shipping paper at issue. <p>(NOTE: For bulk waste, variations greater than 10 percent in weight are significant discrepancies, and for batch waste, any variation in piece count is a significant discrepancy. Significant discrepancies in type are obvious differences that can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid or toxic constituents not reported on the manifest or shipping paper. These discrepancies may only be discovered after waste analysis.)</p> <p>...</p> |

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| <p>4-138. Reports must be submitted to the USEPA when a facility accepts an unmanifested waste shipment (40 CFR 264.76 and 265.76).</p> <p style="text-align: center;">...</p> | <p>Determine if unmanifested shipments have been accepted. (15)(16)(17)</p> <p>Verify that reports (Form 8700-13B) are submitted within 15 days. (15)(16)(17)</p> <p>(NOTE: When small quantities (i.e., waste from a CESQG) are received without certification that the waste is excluded from manifest requirements, an unmanifested waste report should be filed.)</p> <p style="text-align: center;">...</p> |
| <p>ALL TSDFs - Closure</p> <p>4-139. TSDFs must comply with certain closure schedules (40 CFR 264.113(a) through 264.113(d), 264.114, 265.113(a) through 265.113(d), and 265.114).</p> <p style="text-align: center;">...</p> | <p>Verify that within 90 days after receiving the final volume of waste, all hazardous waste has been treated and removed or disposed of onsite in accordance with the closure plan. (13)(15)(16)(17)</p> <p>(NOTE: The Regional Administrator may grant variances on the time period.)</p> <p>(NOTE: During partial and final closure periods, all contaminated equipment, structures, and soils must be properly disposed of. By removing any hazardous wastes or constituents during closure, the TSDF becomes a hazardous waste generator and is subject to the requirements of 40 CFR 262.)</p> <p style="text-align: center;">...</p> |
| <p>4-140. All TSDFs are required to follow certain notification procedures for partial and final closure (40 CFR 264.112 (d)(1) and 265.112(d)(1)).</p> <p style="text-align: center;">...</p> | <p>Verify that TSDFs with surface impoundments, waste piles, land treatment units, or landfill units notify the Regional Administrator: (15)(16)(17)</p> <ul style="list-style-type: none"> - 180 days before the expected date of beginning closure of first unit for interim status TSDFs without an approved closure plan, 60 days with an approved closure plan - 60 days before the expected date of beginning closure for all permitted facilities. <p>Verify that TSDFs with only tanks, containers, or incinerator units notify the Regional Administrator within 45 days before date of beginning final closure. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-141. Within 60 days of completion of closure of each hazardous waste surface impoundment, waste pile, land treatment unit, and landfill unit, facilities must submit a certification of closure to the Regional Administrator (40 CFR 264.115 and 265.115).</p> | <p>Verify that a certification of closure was sent to the Regional Administrator by registered mail. (15)(16)(17)</p> |

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| <p>4-142. By the time certification of closure has been submitted, facilities are required to submit, to specific authorities, a survey plat indicating the location and dimensions of landfill cells in relationship to permanently surveyed landmarks (40 CFR 264.110(b), 264.116, 265.110(b), and 265.116).</p> <p style="text-align: center;">...</p> <p>4-143. Postclosure care of hazardous waste management units must meet specific parameters (40 CFR 264.110(b), 264.117, 265.110(b), and 265.117).</p> <p style="text-align: center;">...</p> | <p>Verify that a survey plat was submitted to the local zoning authorities, or the authority with jurisdiction over local land use, and to the Regional Administrator. (15)(16)(17)</p> <p>(NOTE: These requirements apply to the following:</p> <ul style="list-style-type: none"> - all hazardous waste disposal facilities - waste piles and surface impoundments from which the owner or operator intends to remove the wastes at closure - tank systems that are required to meet the requirements for landfills - as of 18 February 1993, containment buildings that are required to meet the requirements for landfills.) <p style="text-align: center;">...</p> <p>Verify that postclosure care lasts for 30 yr after closure and consists of the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - monitoring and reporting as required in other sections - maintenance of waste containment systems - verification that use of the property is not disturbing the integrity of the final cover, liner, or any other components. <p>(NOTE: These requirements apply to the following:</p> <ul style="list-style-type: none"> - all hazardous waste disposal facilities - waste piles and surface impoundments from which the owner or operator intends to remove the wastes at closure - tank systems that are required to meet the requirements for landfills - as of 18 February 1993, containment buildings that are required to meet the requirements for landfills.) <p style="text-align: center;">...</p> |

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| <p>PERMITTED TSDFs</p> <p>4-144. Permitted facilities that receive hazardous waste from offsite sources must inform the generator in writing that the facility has the appropriate permit and will accept the waste (40 CFR 264.12(b)).</p> <p style="text-align: center;">...</p> <p>4-145. Permitted facilities that treat, store, or dispose of hazardous waste with solid waste management units are required to institute corrective actions as outlined in the permit to protect human health and the environment from releases (40 CFR 264.90 (a) and 264.101).</p> <p style="text-align: center;">...</p> <p>4-146. Container storage areas at TSDFs must have a containment system that meets specific standards (40 CFR 264.175(a) and 264.175 (b)).</p> <p style="text-align: center;">...</p> | <p>Verify that notification is sent and a copy is kept in the operating record. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>(NOTE: This applies regardless of when the waste was placed in solid waste management units.)</p> <p>Verify that corrective actions required by the permit are being done. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that all container storage areas meet the following criteria: (5)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - containers are stored on a base that is free from cracks or gaps and is impervious so that leaks, spills, and precipitation are contained - the base is sloped (or otherwise designed) to drain and remove liquids resulting from leaks, spills, or precipitation unless the containers are elevated - spilled or leaked waste and accumulated precipitation are removed in a timely manner - the containment system has adequate capacity to contain 10 percent of the volume of the containers or the volume of the largest container, whichever is greater - run-on into the containment system is prevented unless the system has sufficient capacity to contain any run-on that might enter the system in addition to the already required capacity. <p>(NOTE: If the collected material is a hazardous waste, it must be handled accordingly. If it is discharged through a point source, it is subject to the CWA requirements.)</p> <p style="text-align: center;">...</p> |

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| <p>4-147. Containment at permitted TSDFs for containers holding wastes that do not contain free liquids must meet specific criteria that is lesser than that for general containment areas (40 CFR 264.175(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that one of the following storage area criteria is met if wastes do not contain free liquids: (15)(16)(17)</p> <ul style="list-style-type: none"> - the area is sloped or able to drain and remove liquid resulting from precipitation - containers are elevated or protected from contact with accumulated liquid. <p>(NOTE: Storage areas must have complete containment systems when the containers holding U.S. Hazardous Waste No. F020, F022, F023, F026, and F027 do not contain free liquids.)</p> <p style="text-align: center;">...</p> |
| <p>4-148. When container storage areas are closed at permitted TSDFs, specific conditions must be met (40 CFR 264.178).</p> <p style="text-align: center;">...</p> | <p>Verify that the following closure criteria were met: (15)(16)(17)</p> <ul style="list-style-type: none"> - all hazardous waste and residues were removed from the containment system - remaining containers, liners, bases, and soils (containing or contaminated with hazardous waste or hazardous waste residues) were decontaminated or removed - all hazardous wastes (including materials removed from the containment system) were managed appropriately. <p style="text-align: center;">...</p> |
| <p>4-149. Facilities with permitted surface impoundments, waste piles, land treatment units, or landfills that received hazardous waste after 26 July 1982 are required to conduct monitoring and response programs under specific circumstances (40 CFR 264.90(a)(2) and 264.91).</p> <p style="text-align: center;">...</p> | <p>Verify that whenever hazardous constituents specified in the permit by the Regional Administrator are detected at designated compliance points, a compliance monitoring program is started. (15)(16)(17)</p> <p>Verify that whenever groundwater protection limits are exceeded, a corrective action program is initiated. (15)(16)(17)</p> <p>Verify that whenever hazardous constituents specified in the permit by the Regional Administrator exceed concentration limits under 40 CFR 264.94 in groundwater between a designated compliance point and the downgradient facility property boundary, a corrective action program or a detection monitoring program is started. (15)(16)(17)</p> <p>Verify that the facility is meeting the elements of the monitoring and response program specified by the Regional Administrator in the permit. (15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>4-150. Facilities with permitted surface impoundments, waste piles, land treatment units, or landfills that received hazardous waste after 26 July 1982 are required to comply with specific concentration limits in the groundwater for hazardous constituents, as designated by the Regional Administrator in the permit (40 CFR 264.94).</p> <p style="text-align: center;">...</p> | <p>Verify that the concentration of hazardous constituents does not exceed: (15)(16)(17)</p> <ul style="list-style-type: none"> - the background level of that constituent in the groundwater at the time that limit is specified in the permit - the limits outlined in 40 CFR 264.94 - an alternate limit set by the Regional Administrator. <p style="text-align: center;">...</p> |
| <p>4-151. Facilities with permitted surface impoundments, waste piles, land treatment units, or landfills that received hazardous waste after 26 July 1982, and that detect statistically significant evidence of contamination for chemical parameters or hazardous constituents designated in the permit, must meet specific requirements (40 CFR 264.98 (g)).</p> <p style="text-align: center;">...</p> | <p>Verify that if statistically significant evidence of contamination is detected, the following actions are taken: (15)(16)(17)</p> <ul style="list-style-type: none"> - the Regional Administrator is notified in writing within 7 days - the groundwater in all monitoring wells is immediately sampled - sampling is repeated after 1 mo for any compounds detected that are listed in Appendix IX of 40 CFR 264 - within 90 days, an application for a permit is submitted to the Regional Administrator to establish a compliance monitoring program. <p style="text-align: center;">...</p> |
| <p>4-152. If, during a compliance monitoring program, the facility determines that the concentration limits listed in 40 CFR 264.94 are being exceeded at any monitoring well at the point of compliance, specific actions are required (40 CFR 264.99(h)).</p> <p style="text-align: center;">...</p> | <p>Verify that the following actions are taken when concentrations are exceeded: (15)(16)(17)</p> <ul style="list-style-type: none"> - the Regional Administrator is notified in writing within 7 days - an application for a permit modification to establish a corrective action program is submitted within 180 days. <p style="text-align: center;">...</p> |

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| <p>4-153. Facilities operating corrective action programs are required to report semiannually to the Regional Administrator on their effectiveness (40 CFR 264.100(g)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility operates a corrective action program. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-154. Facilities that are seeking a permit for the treatment, storage, or disposal of hazardous waste must initiate the corrective actions needed to protect human health and the environment from all releases of hazardous waste of constituents from any solid waste management unit (SWMU), regardless of when the waste was placed in the unit (40 CFR 264.101).</p> <p style="text-align: center;">...</p> | <p>Verify that the corrective actions specified in the permit are being done and the compliance schedule is being met. (15)(16)(17)</p> <p>(NOTE: As a part of the corrective action program, the Regional Administrator may designate an area of the facility as a corrective action management unit (CAMU) or a temporary unit (TU).)</p> <p style="text-align: center;">...</p> |
| <p>4-155. All permitted TSDFs are required to document compliance with ignitable, reactive, or incompatible waste management requirements (40 CFR 264.17(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that compliance documentation is maintained at the facility and that it is based on published scientific or engineering literature, data from field tests, or the results of the treatment of similar wastes by similar treatment processes or operating conditions. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-156. Permitted TSDFs with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 ppm are required to submit a semiannual report concerning process vent emissions (40 CFR 264.1036).</p> <p style="text-align: center;">...</p> | <p>Verify that a semiannual report is submitted to the Regional Administrator and that it includes the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - the USEPA ID No., name, and address of the facility - dates when the control device exceeded or operated outside of design specification and the exceedances were not corrected within 24 h - dates when a flare operated with visible emissions - the duration and cause of exceedances and what corrective measures were taken. <p>(NOTE: If there are no exceedances, a report is not required.)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>INTERIM STATUS TSDFs</p> <p>4-157. Interim status TSDFs must conduct waste analysis and trial tests when a tank system is used to treat or store a substantially different waste than before (40 CFR 265.200).</p> <p style="text-align: center;">...</p> <p>4-158. Facilities operating surface impoundments, landfills, or land treatment facilities are required to have a groundwater monitoring program that can determine the impact of the facility on the uppermost aquifer (40 CFR 265.90(a) through 265.90 (c) and 265.90(e)).</p> <p style="text-align: center;">...</p> <p>4-159. Groundwater monitoring systems are required to meet specific standards (40 CFR 265.91).</p> <p style="text-align: center;">...</p> | <p>Verify that if the facility has interim status, proper waste analysis and trial tests are completed when a tank system is used to treat or store a substantially different waste than before or if a substantially different process is used than was previously. (15)(16)(17)</p> <p>Verify that if similar waste under similar operating conditions is to be treated or stored, written documentation on the waste exists. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that unless the facility has demonstrated in writing that there is a low potential for water migration or has received a waiver, the facility has a groundwater monitoring program. (15)(16)(17)</p> <p>Verify that the monitoring program is carried out throughout the active life of the facility and also during postclosure for disposal facilities. (15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that the groundwater monitoring system is capable of yielding groundwater samples for analysis. (15)(16)(17)</p> <p>Verify that groundwater monitoring systems consist of the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - at least one monitoring wells installed hydraulically upgradient from the limit of the waste management area - at least three monitoring wells installed hydraulically downgradient at the limit of the waste management area - an alternate hydraulically downgradient monitoring well location that has been demonstrated, in writing, to be sufficient. <p>(NOTE: Separate monitoring systems are not required for each component of a waste management system if the upgradient and downgradient sampling will detect any discharge from the waste management area.)</p> <p style="text-align: center;">...</p> |

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| <p>4-160. The facility must gather and analyze samples from the ground-water monitoring system according to a ground-water sampling and analysis plan (40 CFR 265.92).</p> <p>...</p> <p>4-161. Facilities with interim status TSDFs must have an outline of a more extensive ground-water quality assessment program (40 CFR 265.93(a)).</p> <p>...</p> <p>4-162. When there is a significant increase for pH, specific conductance, total organic carbon, or total organic halogen (or pH decrease) in the downgradient wells, the facility must perform specific actions (40 CFR 265.92(c)(2) and 265.92(d)(1) through 265.92(d)(4)).</p> <p>...</p> | <p>Verify that the plan includes procedures and techniques for the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - sample collection - sample preservation and shipment - analytical procedures - chain of custody control. <p>Verify that the facility established initial background groundwater quality. (15)(16)(17)</p> <p>Verify that concentrations and/or values are determined for the following parameters, and that samples are collected as indicated: (15)(16)(17)</p> <ul style="list-style-type: none"> - parameters characterizing the suitability of groundwater as drinking water as found in Appendix III of 40 CFR 265 - parameters of chloride, iron, manganese, phenols, sodium, sulfate: annually - parameters for pH, specific conductance, total organic carbon, total organic halogen: semiannually. <p>Verify that the elevation of the groundwater surface is determined each time a sample is obtained. (15)(16)</p> <p>...</p> <p>Determine if a groundwater quality assessment program has been developed. (15)(16)(17)</p> <p>Verify that the program is capable of determining: (15)(16)(17)</p> <ul style="list-style-type: none"> - if hazardous waste or hazardous waste constituents have entered the groundwater - the rate and extent of migration of hazardous waste or hazardous waste constituents in the groundwater - the concentrations of hazardous waste or hazardous waste constituents in the groundwater. <p>...</p> <p>Verify that additional samples are taken from those wells showing a significant change. (15)(16)(17)</p> <p>Verify that if a significant increase (or pH decrease) is confirmed, written notice is issued to the Regional Administrator within 7 days of the confirmation. (15)(16)(17)</p> <p>Verify that within 15 days after the notification was submitted, the facility submits a groundwater quality assessment program. (15)(16)(17)</p> <p>Verify that the program is implemented. (15)(16)(17)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>4-163. If a facility is required to have a groundwater assessment program, specific reports must be submitted and actions taken, depending on the results of the program (40 CFR 265.93 (d)(5) through 265.93 (d)(7)).</p> <p style="text-align: center;">...</p> <p>4-164. Unless the groundwater is being monitored to satisfy a groundwater assessment program, the facility is required to meet specific reporting and recordkeeping requirements (40 CFR 265.94(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that the program was implemented as soon as possible and a written report containing an assessment of the water was sent to the Regional Administrator. (15)(16)(17)</p> <p>(NOTE: If the results of the first determinations under the program show that no hazardous waste or hazardous waste constituents have entered the groundwater, the facility can return to its usual practices of monitoring.)</p> <p style="text-align: center;">...</p> <p>Verify that records on analyses and groundwater elevations are kept throughout the life of the facility and for disposal facilities through post-closure. (15)(16)(17)</p> <p>Verify that during the first year of groundwater monitoring, the results of parameter monitoring are submitted to the Regional Administrator within 15 days after completing each quarterly analysis. (15)(16)(17)</p> <p>Verify that, after the first year, concentrations and values for monitored parameters are reported annually. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>PERMITTED INCINERATORS</p> <p>4-165. Facilities with permitted hazardous waste incinerators must comply with certain regulations (40 CFR 264.340 (a) through 264.340(c), 264.341 through 264.344 (a), 264.345, and 264.346).</p> | <p>Determine if the facility incinerates hazardous waste. (15)(16)(17)</p> <p>Determine if specific wastes (Principal Organic Hazardous Constituents (POHCs)) are specified in the permit. (15)(16)(17)</p> <p>Verify that only the wastes listed in the permit are burned, and only under the operating conditions set forth in the permit. (15)(16)(17)</p> <p>Verify that sufficient waste analyses are conducted throughout normal operations to verify that waste feed is within the limits specified in the permit. (15)(16)(17)</p> <p>Verify that for each waste specified in the permit, the incinerator achieves a Destruction and Removal Efficiency (DRE) of 99.99 percent. (15)(16)(17)</p> <p>Verify that the DRE for all wastes incinerated is determined by the following equation: (15)(16)(17)</p> <p style="margin-left: 40px;">- $DRE = (W [IN] - W [OUT]) / W [IN] \times 100\%$</p> <p style="margin-left: 40px;">- where: W[IN] = mass feed rate of one POHC in the waste stream feeding the incinerator and W [OUT] = mass emissions rate of the same POHC present in the exhaust emissions.</p> <p>Verify that when USEPA Hazardous Waste No. F020-F023, F026, or F027 are incinerated, a DRE of 99.9999 percent is achieved, and the Regional Administrator is notified of the intent to burn. (15)(16)(17)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>4-166. Permitted hazardous waste incinerators are required to meet specific emission standards (40 CFR 264.343(b) and 264.343(c)).</p> <p>...</p> <p>4-167. Operators of incinerators must conduct monitoring while incinerating hazardous waste (40 CFR 264.347).</p> <p>...</p> <p>4-168. When permitted hazardous waste incinerators are closed, all hazardous waste and hazardous waste residues must be removed (40 CFR 264.351).</p> <p>...</p> | <p>Determine if the incinerator produces stack emissions of hydrogen chloride (HCL). (15)(16)(17)</p> <p>Verify that if HCL emissions exceed 1.8 kg/h (4 lb/h), the emissions are controlled so that the rate of emission is no greater than the larger of either 1.8 kg/h (4 lb/h) or 1 percent HCL in the stack gas prior to entering any pollution control equipment. (15)(16)(17)</p> <p>Verify that particulate matter no greater than 180 mg/dscm (0.08 grains/dscf) is emitted. (15)(16)(17)</p> <p>...</p> <p>Verify that the operator monitors, at a minimum, the following at the indicated intervals: (15)(16)(17)</p> <ul style="list-style-type: none"> - waste feed rate, combustion temperature, combustion gas velocity, CO (before release): continuously - the incinerator and associated equipment for leaks, spills, etc.: daily - the emergency waste feed cutoff system and associated emergency cutoff alarms: weekly. <p>Verify that monitoring and inspection data is recorded and the records placed in the operating log. (15)(16)(17)</p> <p>...</p> <p>Verify that all hazardous wastes and hazardous waste residues, including ash, scrubber waters, and scrubber sludges, are removed from the incinerator site. (5)(15)(16)(17)</p> <p>...</p> |

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| <p>INTERIM STATUS INCINERATORS</p> <p>4-169. Facilities with interim status that use incinerators for hazardous waste must sufficiently analyze all wastes burned (40 CFR 265.340 and 265.341).</p> <p>...</p> <p>4-170. Facilities with interim status may burn USEPA Hazardous Waste No. F020 through F023, F026, and F027 if they have proper certification (40 CFR 265.352).</p> <p>...</p> | <p>Determine if the facility incinerates hazardous wastes. (15)(16)(17)</p> <p>Determine if the results of each waste are kept on file in the operating record. (15)(16)(17)</p> <p>Verify that for each waste not previously burned at the facility, the results of the waste analysis establish: (15)(16)(17)</p> <ul style="list-style-type: none"> - steady state (normal) operating conditions, including: <ul style="list-style-type: none"> - waste fuel feed - auxiliary fuel feed - air flow - type of pollutants that might be emitted - heating value - halogen content - sulfur content - lead concentration level - mercury concentration level. <p>(NOTE: Facilities with interim status may be exempted from all the requirements for hazardous waste incinerators (except closure) under certain conditions:</p> <ul style="list-style-type: none"> - the facility has written documentation that the wastes they incinerate do not contain any of the hazardous constituents listed in 40 CFR 261, Appendix VIII - the above mentioned documentation is retained at the facility - the wastes are listed as hazardous solely because of their ignitable (Hazard Code I) or corrosive (Hazard Code C) properties, or both, as listed and determined in 40 CFR 261, part C or D - the wastes are listed as reactive (Hazard Code R) for characteristics other than those listed in 40 CFR 261.23(a)(1), (2), (3), (6), (7), or (8) and will not be burned when other hazardous wastes are present in the combustion zone.) <p>...</p> <p>Determine if the facility burns USEPA Hazardous Waste No. F020 through F023, F026, or F027. (15)(16)(17)</p> <p>Verify that the facility has received certification from the Assistant Administrator for Solid Waste and Emergency Response if such wastes are burned at the facility. (15)(16)(17)</p> <p>...</p> |

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| <p>4-171. Facilities with interim status that incinerate hazardous waste must not feed hazardous waste unless the incinerator is at a steady state (40 CFR 265.345).</p> <p style="text-align: center;">...</p> | <p>Verify, by observing the incinerator during startup and shutdown, that the waste is not fed until steady state conditions are reached. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>4-172. An interim status facility that incinerates hazardous waste must conduct monitoring and inspections (40 CFR 265.347).</p> <p style="text-align: center;">...</p> | <p>Verify that the following monitoring and inspection procedures are followed: (15)(16)(17)</p> <ul style="list-style-type: none"> - existing instruments related to combustion and emission are monitored every 15 min, including the instruments that control: <ul style="list-style-type: none"> - waste feed - auxiliary fuel feed - air flow - incinerator temperature - scrubber flow - scrubber pH - the complete incinerator and associated equipment a.e monitored at least daily for leaks, spills, and fugitive emissions, including: <ul style="list-style-type: none"> - pumps - valves - conveyors - pipes - emergency shutdown controls - system alarms. <p style="text-align: center;">...</p> |
| <p>4-173. At closure of an interim status incinerator, all hazardous waste and hazardous waste residues must be removed (40 CFR 265.351).</p> <p style="text-align: center;">...</p> | <p>Verify that when an interim status hazardous waste incinerator is closed, the wastes and residues are removed. (5)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>LAND DISPOSAL OF RESTRICTED WASTES</p> <p>4-174. Facilities must not dispose of the wastes listed in Appendix 4-4 on land unless specific parameters are met (40 CFR 268.1, 268.4, and Appendix VII).</p> | <p>Verify that the wastes listed in Appendix 4-4 are not disposed of on land after the indicated dates in the table, unless: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - the facility was granted an extension - the waste is hazardous only because it exhibits a hazardous characteristic and is otherwise prohibited from land disposal; it is not prohibited from land disposal if the waste: <ul style="list-style-type: none"> - is disposed of into a nonhazardous or hazardous injection well - does not exhibit any prohibited characteristic of a hazardous waste at the point of injection - disposal is done in a surface impoundment if: <ul style="list-style-type: none"> - treatment of the wastes occurs at the impoundment - sampling, testing, and removal procedures and design requirements outlined in 40 CFR 268.4 are followed - the waste is treated. <p>(NOTE: The following are exempt from all of the requirements concerning restricted wastes found in 40 CFR 268:</p> <ul style="list-style-type: none"> - waste generated by SQGs of less than 100 kg [220.46 lb] of nonacute hazardous waste or less than 1 kg [2.2 lb] of acute hazardous waste per month - waste pesticides disposed of by farmers - wastes identified or listed as hazardous after 8 November 1984, for which the USEPA has not promulgated land disposal prohibitions or treatment standards - De minimis losses to wastewater treatment systems of commercial chemical product or chemical intermediates that are ignitable (D001), or corrosive (D002), and that contain underlying hazardous constituents - laboratory wastes displaying the characteristic of ignitability (D001), or corrosivity (D002), and that are co-mingled with other plant wastewaters under designated circumstances - laboratory wastes that are ignitable and corrosive, containing underlying hazardous constituents from laboratory operations, that are mixed with other plant wastewaters at facilities whose ultimate discharge is subject to CWA regulations, if the annualized flow of laboratory wastewater into the facility's headwork does not exceed 1 percent, or the laboratory wastes combined annualized sewage concentration does not exceed one ppm in the facility's headwork.) <p>(NOTE: As of 8 May 1993, debris that is contaminated with the wastes listed in Appendix 4-4, and debris that is contaminated with any characteristic waste for which there are treatment standards, is prohibited from land disposal.)</p> |

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| <p>4-175. Wastes, or the residuals from the treatment of a waste, that are restricted from land disposal shall not be diluted as a substitute for adequate treatment (40 CFR 268.3).</p> <p>...</p> <p>4-176. Appendix 4-7 lists restricted wastes and the concentrations of their associated constituents that must not be exceeded by the waste or residual for allowable disposal of the waste or residual (40 CFR 268.40(c) and 268.43).</p> <p>...</p> | <p>Verify that restricted wastes, or the residuals from the treatment of restricted wastes, are not diluted, unless they are hazardous only because they exhibit a characteristic in a treatment system that treats wastes that are then discharged into water of the United States by permit, or that treats wastes for the purpose of pretreatment, or unless the waste is a D003 reactive cyanide wastewater or nonwastewater. (15)(16)(17)</p> <p>...</p> <p>Verify that restricted wastes that are disposed of on land meet the criteria in Appendix 4-7. (15)(16)(17)</p> <p>(NOTE: Appendix 4-8 lists extract concentrations for the constituents of wastes F001 through F005 as a supplement to Appendix 4-7.)</p> <p>...</p> |

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| <p>4-177. When a generator is managing a restricted waste, a notice must be issued to the TSD, in writing, of the appropriate treatment standards and prohibition levels (40 CFR 268.7 (a)(1) through 268.7(a)(3), and 268.7(a)(10)).</p> | <p>Verify that for restricted waste that does not meet the applicable treatment standards or that exceeds the applicable prohibition levels, a notice is issued which includes: (15)(16)(17)</p> <ul style="list-style-type: none"> - the USEPA hazardous waste No. - treatment standards - the manifest No. associated with the shipment - for hazardous debris, the contaminants subject to treatment and the following statement: <i>This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45</i> - the waste analysis data, when available. <p>Verify that for restricted waste that can be land disposed of without further treatment (this does not include debris that does not contain hazardous waste), the notice includes: (15)(16)(17)</p> <ul style="list-style-type: none"> - the USEPA hazardous waste No. - treatment standards - the manifest No. associated with the shipment - the waste analysis data, when available - the signature of an authorized representative certifying that the waste complies with the treatment standards of 40 CFR 268. <p>Verify that for restricted waste that is subject to an exemption from a prohibition of the type of land disposal used, the notice states that the waste is not prohibited from land disposal and includes: (15)(16)(17)</p> <ul style="list-style-type: none"> - the USEPA hazardous waste No. - treatment standards - the manifest No. associated with the shipment - the waste analysis data, when available - for hazardous debris, the contaminant subject to treatment - the date the waste is subject to prohibitions. <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste, subject to the agreement.)</p> |

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| <p>4-178. Generators that are managing prohibited wastes in tanks, containers, or containment buildings, and are treating the waste to meet applicable treatment standards, must develop and follow a written waste analysis plan (40 CFR 268.7(a)(4) and 268.7(a)(10)).</p> | <p>Verify that the plan describes the procedures that the generator will follow to comply with treatment standards. (15)(16)(17)</p> <p>(NOTE: Generators treating hazardous debris under the alternative treatment standards are not required to conduct waste analysis.)</p> <p>Verify that the plan is kept onsite and: (15)(16)(17)</p> <ul style="list-style-type: none"> - is based on a detailed chemical and physical analysis of representative sample of the prohibited waste being treated - is filed with the USEPA Regional Administrator or state authorized official at least 30 days before the treatment activity, with delivery verified. <p>(NOTE: SQGs with tolling agreements are required to comply with notification and certification requirements for the initial shipment of waste, subject to the agreement.)</p> |
| <p>4-179. Generators are required to keep specific documents pertaining to restricted wastes onsite (40 CFR 268.7(a)(5) through 268.7(a)(7) and 268.7(a)(10)).</p> | <p>Verify that if the installation is using generator knowledge to determine whether a waste meets LDR requirements, the supporting data used in making this determination is retained. (15)(16)(17)</p> <p>Verify that if the installation has determined whether a waste is restricted by using appropriate test methods, the waste analysis data is retained. (15)(16)(17)</p> <p>Verify that if the installation has determined that it is managing a restricted waste that is excluded from the definition of a hazardous or solid waste or exempt from RCRA-C, a one-time notice is placed in the installations files, stating that the generated waste is excluded. (15)(16)(17)</p> <p>Verify that a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation is kept for at least 5 yr from the date the waste was last sent to onsite or offsite treatment, storage, or disposal. (15)(16)(17)</p> <p>Verify that SQGs with tolling agreement retain the agreement and copies of notification and certification for at least 3 yr after the agreement expires. (15)(16)(17)</p> |

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| <p>4-180. Treatment facilities are required to follow specific procedures for restricted wastes (40 CFR 268.7(b)).</p> | <p>Verify that treatment facilities are testing their waste according to the procedures outlined in their waste analysis plan. (15)(16)(17)</p> <p>Verify that the treatment facility sends a notice with each waste shipment going to a land disposal facility, except for debris excluded from the definitions of hazardous waste, that includes the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - USEPA hazardous waste No. - treatment standards - the manifest No. associated with the shipment of waste - waste analysis data, where available. <p>Verify that the treatment facility submits a certification with each shipment of waste or treatment residue of a restricted waste, except for debris excluded from the definitions of a hazardous waste, to the land disposal facility stating that the waste has been treated in compliance with applicable standards. (15)(16)(17)</p> <p>(NOTE: If waste or treatment residues will be further managed at a different treatment or storage facility, the TSDF sending the waste or treatment residue offsite must comply with notice and certification requirements.)</p> <p>(NOTE: Where the wastes are recyclable materials used in a manner constituting disposal, the installation treatment facility is not required to notify the receiving facility.)</p> |
| <p>4-181. Land disposal facilities for restricted wastes are required to maintain copies of notices and certifications and test the waste, except when disposing of waste that is recycled material used in a manner constituting disposal (40 CFR 268.7 (c)).</p> | <p>Verify that copies of the certifications and notification are kept on hand. (15)(16)(17)</p> <p>Verify that the facility is testing waste as specified in the facility's waste analysis plan. (15)(16)(17)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>4-182. Generators who first claim that hazardous debris is excluded from the definition of hazardous waste are required to meet specific notification and certification requirements (40 CFR 268.7(d)).</p> <p>4-183. The storage of hazardous waste that is restricted from land disposal is not allowed unless specific conditions are met (40 CFR 268.50).</p> | <p>Verify that a one-time notification is submitted to the USEPA Director or authorized state agency including the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - name and address of the facility receiving the treated waste - description of the hazardous debris as initially generated, including the applicable USEPA hazardous waste No. - for excluded debris, the technology used to treat the debris. <p>Verify that the notification is updated if the debris is shipped to a different facility. (15)(16)(17)</p> <p>Verify that for excluded debris, if a different type of debris is treated or a different technology used to treat the debris, the notification is updated. (15)(16)(17)</p> <p>Verify that land disposal restricted waste is not stored at the facility, unless: (15)(16)(17)</p> <ul style="list-style-type: none"> - the generator is storing the waste in tanks, containers, or containment buildings onsite only for the purpose of accumulating enough quantity of hazardous waste to facilitate proper recovery, treatment, or disposal, and all appropriate standards for containers, tanks, and containment buildings are met - the TSDF is storing the waste in tanks, containers, or containment buildings in order to accumulate the necessary quantities for proper recovery, treatment, or disposal and: <ul style="list-style-type: none"> - each container is marked to identify contents and the date accumulation began - each tank is clearly marked with a description of the contents and the quantity of each hazardous waste received, and the start date of accumulation or a record of such information is maintained. <p>Verify that transporters do not store manifested shipments of land disposal restricted wastes for more than 10 days. (15)(16)(17)</p> <p>(NOTE: A TSDF may store the land disposal restricted wastes for up to 1 yr if is proven that the reason for the storage is to accumulate such quantities of hazardous waste necessary to facilitate proper recovery, treatment, or disposal.)</p> <p>(NOTE: The prohibition on storage does not apply to hazardous wastes that have met treatment standards.)</p> <p>Verify that liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than 50 ppm are stored at a facility that meets the requirements of 40 CFR 761.65(b) (see <i>Special Pollutants Management</i>) and are removed from storage within 1 yr of the date they were first placed into storage. (15)(16)(17)</p> |

DIVISION: (1) Natural Resources Management (2) Engineering (3) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

Appendix 4-1

40 CFR 261 Identification and Listing of Hazardous Waste

TABLE I

Hazardous Waste from Nonspecific Sources

(40 CFR 261.30 through 261.31)

| Industry and USEPA Hazardous Waste No. | Hazardous Waste | Hazard Code* |
|--|---|-----------------|
| | <u>Generic</u> | |
| F001 | The spent halogenated solvents used in degreasing: Trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and the chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. | (t) |
| F002 | The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume), of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures. | (t) |
| F003 | The spent nonhalogenated solvents, Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents and spent solvent mixtures. | (i) |
| | <u>* HAZARD CODES (Column 3)</u> t = toxic waste i = ignitable waste r = reactive waste h = acute hazardous waste ** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: As a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol. | |

Appendix 4-1 (continued)

| Industry and USEPA Hazardous Waste No. | Hazardous Waste | Hazard Code* |
|--|--|-----------------|
| F004 | The spent nonhalogenated solvents, cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents. | (t) |
| F005 | The following spent nonhalogenated solvents: Toluene, methyl ethyl ketone, carbons disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these solvents. | (i,t) |
| F006 | Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum. | (t) |
| F007 | Spent cyanide plating bath solution from electroplating operations. | (r,t) |
| F008 | Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process. | (r,t) |
| F009 | Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process. | (r,t) |
| F010 | Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process. | (r,t) |
| F011 | Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations. | (r,t) |

* HAZARD CODES (Column 3)

t = toxic waste
i = ignitable waste
r = reactive waste
h = acute hazardous waste

** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: As a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.

Appendix 4-1 (continued)

| Industry and USEPA Hazardous Waste No. | Hazardous Waste | Hazard Code* |
|---|--|-------------------------|
| F012 | Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process. | (t) |
| F019 | Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process. | (t) |
| F020 | Wastes from use of tri-, or tetrachlorophenol, or intermediates used to produce its pesticide derivatives. ** | (h) |
| F021 | Wastes of pentachlorophenol, or intermediates used to produce its derivatives. ** | (h) |
| F022 | Wastes, of tetra-, penta-, or hexachlorobenzenes under alkaline conditions. ** | (h) |
| F023 | Wastes, of tri and tetrachlorophenols. ** | (t) |
| F024 | Wastes, including but not limited to distillation residues, heavy ends, tars, and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons, utilizing free radical catalyzed processes having carbon chain lengths from one to five. (Omits light ends, spent filters and filter aids, spent desiccants, wastewater, wastewater treatment sludges, spent catalysts and wastes listed in 40 CFR 261.32). | (t) |
| F025 | Condensed light ends, spent filters aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. | (t) |

*** HAZARD CODES (Column 3)**

t = toxic waste
i = ignitable waste
r = reactive waste
h = acute hazardous waste

** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: As a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.

Appendix 4-1 (continued)

**Industry and USEPA
Hazardous Waste
No.**

Hazardous Waste

**Hazard
Code***

| | | |
|------|---|-----|
| F026 | Wastes of tetra-, penta-, or hexachlorobenzene under alkaline conditions. | (h) |
| F027 | Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols (does not include hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component). | (h) |
| F028 | Residues from incineration or thermal treatment of soil contaminated with USEPA hazardous waste No. F020, F021, F022, F023, F026, and F027. | (t) |
| F032 | Wastewaters (except those that have not come into contact with process contaminants), process residues, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with 40 CFR 261.35 and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. | (t) |
| F034 | Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use creosote formulations. This listing does not include K001 bottom sludge from the treatment of wastewater from wood preserving processes that use creosote and or pentachlorophenol. | (t) |
| F035 | Wastewaters (except those that have not come into contact with process contaminants), process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. | (t) |

*** HAZARD CODES (Column 3)**

- t = toxic waste
- i = ignitable waste
- r = reactive waste
- h = acute hazardous waste

** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: As a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol.

Appendix 4-1 (continued)

Industry and USEPA
Hazardous Waste
No.

Hazardous Waste

Hazard
Code*

F037

Petroleum refinery primary oil/water/solids separation sludge--Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refiners. This includes, but is not limited to, sludges generated in: Oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units*** (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.

NOTE:

*hazard code:

t= toxic waste

i= ignitable waste

r= reactive waste

h= acute hazardous waste

c= corrosive waste

e= toxicity characteristic waste

* Note: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.

** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: As a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5- trichlorophenol.

*** Aggressive biological treatment units are defined as units which employ one of the following treatment methods: Activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; of (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

Appendix 4-1 (continued)

| Industry and USEPA Hazardous Waste No. | Hazardous Waste | Hazard Code* |
|--|-----------------|-----------------|
|--|-----------------|-----------------|

| | | |
|------|--|-----|
| F038 | Petroleum refinery secondary (emulsified) oil/water/solids separation sludge--Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: Induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from noncontact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units*** (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 are not included in this listing. | (t) |
|------|--|-----|

NOTE:

*hazard code:

t= toxic waste

i= ignitable waste

r= reactive waste

h= acute hazardous waste

c= corrosive waste

e= toxicity characteristic waste

* Note: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.

** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: As a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5- trichlorophenol.

*** Aggressive biological treatment units are defined as units which employ one of the following treatment methods: Activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

Appendix 4-1 (continued)

| Industry and USEPA Hazardous Waste No. | Hazardous Waste | Hazard Code* |
|--|-----------------|-----------------|
|--|-----------------|-----------------|

F038 (cont) biological treatment units) and F037, K048, and K051 wastes are not included in this listing.

F039 Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under Subpart D. (Leachate resulting from the management of one or more of the following wastes and no other hazardous waste retains its hazardous waste number(s): F020, F021, F022, F023, F026, F027, and/or F028.) (t)

NOTE:

*hazard code:

t= toxic waste

i= ignitable waste

r= reactive waste

h= acute hazardous waste

c= corrosive waste

e= toxicity characteristic waste

* The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.

** (except wastewater and spent carbon from hydrogen chloride purification); the manufacturing or production use: As a reactant, chemical intermediate, or component in a formulating process. The listing for F020 and F023 does not include wastes from the production of hexachlorophene from highly purified 2,4,5- trichlorophenol.

*** Aggressive biological treatment units are defined as units which employ one of the following treatment methods: Activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the units employs a minimum of 6hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

Appendix 4-1 (continued)

Hazardous Wastes from Organic and Inorganic Chemical Industries

(40 CFR 261.30 through .31)

| USEPA Hazardous Waste No. | Hazardous Waste | Hazard Code |
|--------------------------------------|---|------------------------|
| Organic Chemicals | | |
| K009 | Distillation bottoms from the production of acetaldehyde from ethylene. | (t) |
| K010 | Distillation side cuts from the production of acetaldehyde from ethylene. | (t) |
| K011 | Bottom stream from the wastewater stripper in the production of acrylonitrile. | (r,t) |
| K013 | Bottom stream from the acetonitrile column in the production of acrylonitrile. | (r,t) |
| K014 | Bottoms from the acetonitrile purification column in the production of acrylonitrile. | (t) |
| K015 | Still bottoms from the distillation of benzyl chloride. | (t) |
| K016 | Heavy ends or distillation residues from the production of carbon tetrachloride. | (t) |
| K017 | Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin. | (t) |
| K018 | Heavy ends from fractionation in ethyl chloride production. | (t) |
| K019 | Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production. | (t) |
| K020 | Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production. | (t) |
| K021 | Aqueous spent antimony catalyst waste from fluoromethanes production. | (t) |
| K022 | Distillation bottom tars from the production of phenol/acetone from cumene. | (t) |

*** HAZARD CODES (Column 3)**

r = reactive waste

t = toxic waste

Appendix 4-1 (continued)

| USEPA Hazardous Waste No. | Hazardous Waste | Code |
|--------------------------------------|---|-------------|
| K023 | Distillation light ends from the production of phthalic anhydride from naphthalene. | (t) |
| K024 | Distillation bottoms from the production of phthalic anhydride from naphthalene. | (t) |
| K025 | Distillation bottoms from the production of nitrobenzene by the nitration of benzene. | (t) |
| K026 | Stripping still tails from the production of methyl ethyl pyridines. | (t) |
| K027 | Centrifuge residue from toluene diisocyanate production. | (r,t) |
| K028 | Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane. | (t) |
| K029 | Waste from the product stream stripper in the production of 1,1,1-trichloroethane. | (t) |
| K030 | Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene. | (t) |
| K083 | Distillation bottoms from aniline production. | (t) |
| K085 | Distillation of fractionation column bottoms from the production of chlorobenzene. | (t) |
| K103 | Process residues from aniline extraction from the production of aniline. | (t) |
| K104 | Combined wastewater streams generated from nitrobenzene or aniline production. | (t) |
| K105 | Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes. | (t) |
| K107 | Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid | (C,T) |
| K108 | Condensed Column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides | (I,T) |

*** HAZARD CODES (Column 3)**

r = reactive waste

t = toxic waste

Appendix 4-1 (continued)

| USEPA Hazardous Waste No. | Hazardous Waste | Code |
|--------------------------------------|---|-------------|
| K109 | Spent filter cartridges from product purification from production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides | (T) |
| K110 | Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides | (T) |
| K093 | Distillation light ends from the production of phthalic anhydride from orthoxylene. | (t) |
| K094 | Distillation bottoms from the production of phthalic anhydride from orthoxylene. | (t) |
| K095 | Distillation bottoms from the production of 1,1,1-trichloroethane. | (t) |
| K096 | Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane. | (t) |
| K111 | Product washwaters from the production of dinitrotoluene via nitration of toluene. | (c,t) |
| K112 | Reaction byproduct water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene. | (t) |
| K113 | Condensed liquid light ennation of dinitrotoluene. | (t) |
| K114 | Vicinals from the purification of toluenediamine in the production of toluenediamine. | (t) |
| K115 | Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene. | (t) |
| K116 | Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine. | (t) |
| K117 | Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene. | (t) |
| K118 | Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene. | (t) |

*** HAZARD CODES (Column 3)**

r = reactive waste

t = toxic waste

Appendix 4-1 (continued)

| USEPA Hazardous Waste No. | Hazardous Waste | Code |
|---|--|------|
| K136 | Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene. | (t) |
| Inorganic Chemicals | | |
| K071 | Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used. | (t) |
| K073 | Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production. | (t) |
| K106 | Wastewater treatment sludge from the mercury cell process in chlorine production. | (t) |
| Hazardous Waste from Explosives Manufacturing | | |
| K044 | Wastewater treatment sludge from the manufacturing and processing of explosives. | (r) |
| K045 | Spent carbon from the treatment of wastewater containing explosives. | (r) |
| K046 | Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds. | (t) |
| K047 | Pink/red water from ammonium nitrate explosive (TNT) operations. | (r) |

* HAZARD CODES (Column 3)

r = reactive waste

t = toxic waste

Appendix 4-2

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Toxic Wastes

40 CFR 261.33

(COMMENT: Primary hazardous properties of these materials have been indicated by the letter (t) (toxicity), (r) (reactivity), (i) (ignitability), and (c) (corrosivity); absence of a letter indicates that the compound is only listed for acute toxicity.)

| USEPA Hazardous Waste No. | Substance |
|------------------------------|--|
| <hr/> | |
| U001 | acetaldehyde (i) |
| U034 | acetaldehyde, trichloro- |
| U187 | acetamide, N-(4-ethoxyphenyl)- |
| U005 | acetamide, N-9H-fluoren-2-yl- |
| U240 | acetic acid, (2,4-dichloropheoxy)-, salts and esters |
| U112 | acetic acid, ethyl ester (i) |
| U144 | acetic acid, lead(2+) salt |
| U214 | acetic acid, thallium(1+) salt |
| see F027 | acetic acid, (2,4,5-trichlorophenoxy)- |
| U002 | acetone (i) |
| U003 | acetonitrile (i,t) |
| U004 | acetophenone |
| U005 | 2-acetylaminoflourene |
| U006 | acetyl chloride (c, r, t) |
| U007 | acrylamide |
| U008 | acrylic acid (i) |
| U009 | acrylonitrile |
| U011 | amitrole |
| U012 | aniline (i, t) |
| U136 | arsenic acid, dimethyl- |
| U014 | auramine |
| U015 | azaserine |
| U010 | azirino(2,3,3,4(pyrrolo(1,2-a)indole -4,7-dione, 6-amino-8-[(aminocarbonyl) oxy)methyl]-1,1a,2,8,8a,8b- hexahydro-8a-methoxy-5-methyl-, |
| U157 | benz[j]aceanthrylene, 1,2-dihydro-3- methyl- |
| U016 | benza[c]ridine |
| U017 | benzal chloride |
| U192 | benzamide, 3,5-dichloro-n- (1,1-diethyl-2-propynyl- |
| U018 | benz[a]anthracene |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|------------------------------|---|
| U094 | 1,2-benzanthracene, 7,12-dimethyl- |
| U012 | benzenamine (i.t) |
| U014 | benzenamine, 4,4-carbonimidoylbis(N,N- dimethyl- |
| U049 | benzenamine, 4-chloro-2-methyl-, hydrochloride |
| U093 | benzenamine, N,N-dimethyl-4- (phenylazo)- |
| U328 | benzenamine, 2-methyl- |
| U353 | benzenamine, 4-methyl- |
| U158 | benzenamine, 4,4-methylenebis(2-chloro- |
| U222 | benzenamine, 2-methyl-, hydrochloride |
| U181 | benzenamine, 2,-methyl-5-nitro |
| U019 | benzene (i, t) |
| U038 | benzeneacetic acid, 4-chloro-alpha- (4-chlorophenyl)-alpha-hydroxy, ethyl ester |
| U030 | benzene, 1-bromo-4-phenoxy- |
| U035 | benzenebutanoic acid, 4-[bis (2-chloroethyl)amino]- |
| U037 | benzene, chloro- |
| U221 | benzenediamine, ar-methyl- |
| U028 | 1,2-benzendicarboxylic acid, [bis(2-ethyl-hexyl)]ester |
| U069 | 1,2-benzenedicarboxylic acid, dibutyl ester |
| U088 | 1,2-benzenedicarboxylic acid, diethyl ester |
| U102 | 1,2-benzendicarboxylic acid, dimethyl ester |
| U107 | 1,2-benzenedicarboxylic acid, dioctyl ester |
| U070 | benzene, 1,2-dichloro- |
| U071 | benzene, 1,3-dichloro- |
| U072 | benzene, 1,4-dichloro- |
| U060 | benzene, 1,1'- (2,2-dichloroethylidene) bis[4-chloro- |
| U017 | benzene, (dichloromethyl)- |
| U223 | benzene, 1,3-diisocyanatomethyl- (r.t) |
| U239 | benzene, dimethyl-(i,t) |
| U201 | 1,3-benzenediol |
| U127 | benzene, hexachloro- |
| U056 | benzene, hexahydro- (i) |
| U220 | benzene, methyl- |
| U105 | benzene, 1-methyl-2,4-dinitro- |
| U106 | benzene, 2-methyl-1,3-dinitro- |
| U055 | benzene, (1-methylethyl)-(i) |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|--------------------------------------|---|
| U169 | benzene, nitro- (i,t) |
| U183 | Benzene, pentachloro- |
| U185 | benzene, pentachloronitro- |
| U020 | benzenesulfonic acid chloride (c,r) |
| U020 | benzenesulfonyl chloride (c,r) |
| U207 | benzene, 1,2,4,5-tetrachloro- |
| U061 | benzene, 1,1'-(2,2,2- trichloroethylidene) bis[4-chloro |
| U247 | benzene, 1,1'-(2,2,2- trichloroethylidene)[4-methoxy- |
| U023 | benzene, (trichloromethyl)- |
| U234 | benzene, 1,3,5-trinitro- |
| U021 | benzidine |
| U202 | 1,2-benzisothiazolin-3-one, 1,1-dioxide and salts |
| U203 | 1,3-benzodioxole, 5-(2-propenyl)- |
| U141 | 1,3-benzodioxole, 5-(1-propenyl)- |
| U090 | 1,3-benzodioxole, 5-propyl- |
| U064 | benzo[rs]pentaphene |
| U248 | 2-H-1-benzopyran-2-on2, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, and salts, when present at concentrations of 0.3% or less |
| U022 | benzo[a]pyrene |
| U197 | p-benzoquinone |
| U023 | benzotrichloride (c,r,t) |
| U085 | 2,2-bioxirane (i,t) |
| U021 | (1,1-biphenyl)-4,4-diamine |
| U073 | (1,1-biphenyl)-4,4-diamine, 3,3-dichloro |
| U091 | (1,1-biphenyl)-4,4-diamine, 3,3- dimethoxy- |
| U095 | (1,1-biphenyl)4,4-diamine, 3,3- dimethyl- |
| U225 | bromoform |
| U030 | 4-bromophenyl phenyl ether |
| U128 | 1,3-butadiene, 1,1,2,3,4,4- hexachloro |
| U172 | 1-butanamine, N-butyl-N-nitroso- |
| U031 | 1-butanol (i) |
| U159 | 2-butanone (i,t) |
| U160 | 2-butanone peroxide (r,t) |
| U053 | 2-butenal |
| U074 | 2-butene, 1,4-dichloro- (i,t) |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|---------------------------|---|
| U143 | 2-butenic acid, 2-methyl-, 7- [(2,3-dihydroxy-2-(1-methoxyethyl)- -3-methyl-1-oxobutoxy)methyl] -2,3,5,7s-erythro-1- pyrrolizin-1-yl ester, [1S-[alpha(Z),7(2S,3R), 7alpha]]- |
| U031 | n-Butyl alcohol (i) |
| U136 | cadidic acid |
| U032 | calcium chromate |
| U238 | carbamic acid, ethyl ester |
| U178 | carbamic acid, methylnitroso- ethyl ester |
| U097 | carbamic chloride, dimethyl- |
| U114 | carbamodithioic acid, 1,2- ethanediybis-, salts and esters |
| U062 | carbamothioic acid, bis(1-methylethyl)-S- (2,3-dichloro-2-propenyl) ester |
| U215 | carbonic acid, dithallium(1+)salt |
| U033 | carbonic difluoride |
| U156 | carbonochlorodic acid, methyl ester (i,t) |
| U033 | carbon oxyfluoride (r,t) |
| U211 | carbon tetrachloride |
| U034 | chloral |
| U035 | chlorambucil |
| U036 | chlordane, alpha and gamma isomers |
| U026 | chlomaphazine |
| U037 | chlorobenzene |
| U039 | p-chloro-m-cresol |
| U041 | 1-chloro-2,3-epoxypropane |
| U042 | 2-chloroethyl vinyl ether |
| U044 | chloroform |
| U046 | chloromethyl methyl ether |
| U047 | beta-chloronaphthalene |
| U048 | o-chlorophenol |
| U049 | 4-chloro-o-toluidine, hydrochloride |
| U032 | chromic acid H ₂ CrO ₄ , calcium salt |
| U050 | chrysene |
| U051 | creosote |
| U052 | cresols (cresylic acid) |
| U053 | crotonaldehyde |
| U055 | cumene (i) |
| U246 | cyanogen bromide |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|--------------------------------------|--|
| U197 | 2,5-cyclohexadiene-1, 4-dione |
| U056 | cyclohexane (i) |
| U129 | cyclohexane 1,2,3,4,5,6- hexachloro-, (1alpha, 2alpha, 3beta, 4alpha, 6beta)- |
| U057 | cyclohexanone (i) |
| U130 | 1,3-cyclopentadiene, 1,2,3,4,5,5- hexachloro- |
| U058 | cyclophosphamide |
| U240 | 2,4-d, salts and esters |
| U059 | daunomycin |
| U060 | ddd |
| U061 | ddt |
| U062 | diallate |
| U063 | dibenz[a,h]anthracene |
| U064 | dibenzo[a,i]pyrene |
| U066 | 1,2-dibromo-3-chloropropane |
| U069 | dibutyl phthalate |
| U070 | o-Dichlorobenzene |
| U071 | m-Dichlorobenzene |
| U072 | p-Dichlorobenzene |
| U073 | 3,3'-dichlorobenzidine |
| U074 | 1,4-dichloro-2-butene (i,t) |
| U075 | dichlorodifluoromethane |
| U078 | 1,1-dichloroethylene |
| U079 | 1,2-dichloroethylene |
| U025 | dichloroethyl ether |
| U027 | dichloroisopropyl ether |
| U024 | dichloromethoxy ethane |
| U081 | 2,4-dichlorophenol |
| U082 | 2,6-dichlorophenol |
| U084 | 1,3-dichlorpropene |
| U085 | 1,2:3,4-diepoxybutane (i, t) |
| U108 | 1,4-diethyleneoxide |
| U028 | diethylhexyl phthalate |
| U086 | N,N-diethylhydrazine |
| U087 | O,O-diethyl-s-methyl dithiophosphate |
| U088 | diethyl phthalate |
| U089 | diethylstilbestrol |
| U090 | dihydrosafrole |
| U091 | 3,3'-dimethoxybenzidine |
| U092 | dimethylamine (i) |
| U093 | dimethylaminoazobenzene |
| U094 | 7,12-dimethylbenz[a]anthracene |
| U095 | 3,3-dimethylbenzidine |
| U096 | alpha,alpha-dimethylbenzylhydroperoxide (r) |
| U097 | dimethylcarbamoyl chloride |
| U098 | 1,1-dimethylhydrazine |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|------------------------------|--|
| U099 | 1,2-dimethylhydrazine |
| U101 | 2,4-dimethylphenol |
| U102 | dimethyl phthalate |
| U103 | dimethyl sulfate |
| U105 | 2,4-dinitrotoluene |
| U106 | 2,6-dinitrotoluene |
| U107 | di-n-octyl phthalate |
| U108 | 1,4-dioxane |
| U109 | 1,2-diphenylhydrazine |
| U110 | dipropylamine (i) |
| U111 | di-n-propylnitrosamine |
| U041 | epichlorhydrin |
| U001 | ethanal (i) |
| U174 | ethanamine, N-ethyl-N-nitroso- |
| U155 | 1,2-ethanediamine, n,n- dimethyl-n'-2-pyridinyl- n'-(2-thienylmethyl)- |
| U067 | ethane, 1,2-dibromo- |
| U076 | ethane, 1,1-dichloro- |
| U077 | ethane, 1,2-dichloro- |
| U131 | ethane, hexachloro- |
| U024 | ethane, 1,1-[methylenebis(oxy)] bis[2-chloro- |
| U117 | ethane, 1,1-oxybis- (i) |
| U025 | ethane 1,1-oxybis[2-chloro- |
| U184 | ethane, pentachloro- |
| U208 | ethane, 1,1,1,2-tetrachloro- |
| U209 | ethane, 1,1,2,2-tetrachloro- |
| U218 | ethanethioamide |
| U359 | ethane, 1,1,2-trichloro- |
| U173 | ethanol, 2,2'-(nitrosoimino)bis- |
| U004 | ethanone, 1-phenyl- |
| U043 | ethene, chloro- |
| U042 | ethene, (2-chloroethoxy-) |
| U078 | ethene, 1,1-dichloro- |
| U079 | ethene, 1,2-dichloro- (e) |
| U210 | ethene, tetrachloro- |
| U228 | ethene, trichloro |
| U112 | ethyl acetate (i) |
| U113 | ethyl acrylate (i) |
| U238 | ethyl carbamate (urethane) |
| U117 | ethyl ether (i) |
| U114 | ethylenebisdithiocarbamic acid, salts and esters |
| U067 | ethylene dibromide |
| U077 | ethylene dichloride |
| U359 | ethylene glycol monoethyl ether |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|------------------------------|---|
| U115 | ethylene oxide (i,t) |
| U116 | ethylenethiourea |
| U076 | ethylidene dichloride |
| U118 | ethyl methacrylate |
| U119 | ethyl methanesulfonate |
| U120 | fluoranthene |
| U122 | formaldehyde |
| U123 | formic acid (c,t) |
| U124 | furan (i) |
| U125 | 2-furancarboxaldehyde (i) |
| U147 | 2,5-furandione |
| U213 | furan, tetrahydro- (i) |
| U125 | furfural (i) |
| U124 | furfuran (i) |
| U206 | glucopyranose, 2-deoxy-2 (3-methyl-3-nitrosoureido)- |
| U126 | glycidylaldehyde |
| U163 | guanidine, N-methyl-N'-nitro- N-nitroso- |
| U127 | hexachlorobenzene |
| U128 | hexachlorobutadiene |
| U130 | hexachlorocyclopentadiene |
| U131 | hexachloroethane |
| U132 | hexachlorophene |
| U243 | hexachloropropene |
| U133 | hydrazine (r,t) |
| U086 | hydrazine, 1,2-diethyl- |
| U098 | hydrazine, 1,1-dimethyl- |
| U099 | hydrazine, 1,2-dimethyl- |
| U109 | hydrazine, 1,2-diphenyl- |
| U134 | hydrofluoric acid (c,t) |
| U134 | hydrogen fluoride (c,t) |
| U135 | hydrogen sulfide |
| U096 | hydroperoxide, 1-methyl-1-phenylethyl- (r) |
| U116 | 2-imidazolidinethione |
| U137 | indeno(1,2,3-cd)pyrene |
| U190 | 1,3-isobenzofurandione |
| U140 | isobutyl alcohol (i,t) |
| U141 | isosafrole |
| U142 | kepone |
| U143 | lasiocarpine |
| U144 | lead acetate |
| U146 | lead, bis(acetato-O) tetrahydroxytri- |
| U145 | lead phosphate |
| U146 | lead subacetate |
| U129 | lindane |
| U163 | mnng |
| U147 | maleic anhydride |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|---------------------------|---|
| U148 | maleic hydrazide |
| U149 | malononitrile |
| U150 | melphalan |
| U151 | mercury |
| U152 | methacrylonitrile (i,t) |
| U092 | methanamine (N-methyl- (i) |
| U029 | methane, bromo- |
| U045 | methane, chloro- (i,t) |
| U046 | methane, chloromethoxy- |
| U068 | methane, dibromo- |
| U080 | methane, dichloro- |
| U075 | methane, dichlorodifluoro- |
| U138 | methane, iodo- |
| U119 | methanesulfonic acid, ethyl ester |
| U211 | methane, tetrachloro- |
| U153 | methanethiol (i,t) |
| U225 | methane, tribromo- |
| U044 | methane, trichloro- |
| U121 | methane, trichlorofluoro- |
| U154 | methanol (i) |
| U155 | methapyrilene |
| U142 | 1,3,4-metheno-2H-cyclobuta[cd]pent-1-one-1,1a,3,3a,4,5,5a,5b,6-decahydrooctahydro- |
| U247 | methoxychlor |
| U154 | methyl alcohol (i) |
| U029 | methyl bromide |
| U186 | 1-methylbutadiene (i) |
| U045 | methyl chloride (i,t) |
| U156 | methyl chlorocarbonate (i,t) |
| U226 | methyl chloroform |
| U157 | 3-methylcholanthrene |
| U158 | 4,4-methylenebis-(2-chloroaniline) |
| U068 | methylene bromide |
| U080 | methylene chloride |
| U159 | methyl ethyl ketone (mek) (i,t) |
| U160 | methyl ethyl ketone peroxide (r,t) |
| U138 | methyl iodide |
| U161 | methyl isobutyl ketone (i) |
| U162 | methyl methacrylate (i,t) |
| U161 | 4-methyl-2-pentanone (i) |
| U164 | methylthiouracil |
| U010 | mitomycin C |
| U059 | 5,12-Naphthacenedione, (Bs(cis)8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxo-hexopyranosyl)oxyl]-7-8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy- |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|------------------------------|--|
| U167 | 1-naphthalenamine |
| U168 | 2-naphthalenamine |
| U026 | naphthalenamine, N,N'-bis (2-chloroethyl)- |
| U165 | naphthalene |
| U047 | naphthalene, 2-chloro- |
| U166 | 1,4-naphthalenedione |
| U236 | 2,7-naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl-(1,1'-biphenyl)- bis(azo)bis(5-amino-4-hydroxy)-, tetrasodium salt |
| U166 | 1,4-Naphthoquinone |
| U167 | alpha-naphthylamine |
| U168 | beta-naphthylamine |
| U217 | nitric acid, thallium(1+) salt (2-chloromethyl)- |
| U169 | nitrobenzene (i,t) |
| U170 | p-nitrophenol |
| U171 | 2-nitropropane (i) |
| U172 | n-nitrosodi-n-butylamine |
| U173 | n-nitrosodiethanolamine |
| U174 | n-nitrosodiethylamine |
| U176 | n-nitroso-n-ethylurea |
| U177 | n-nitroso-n-methylurea |
| U178 | n-nitroso-n-methylurethane |
| U179 | n-nitrosopiperidine |
| U180 | n-nitrosopyrrolidine |
| U181 | 5-nitro-o-toluidine |
| U193 | 1,2-oxathiolane, 2,2-dioxide |
| U058 | 2H-1,3,2-Oxazaphosphorine,2[bis(2- chloroethyl)amino]tetrahydro-, 2-oxide. |
| U115 | oxirane (i,t) |
| U126 | oxiranecarboxyaldehyde |
| U041 | oxirane, 2-(chloromethyl)- |
| U182 | paraldehyde |
| U183 | pentachlorobenzene |
| U184 | pentachloroethane |
| U185 | pentachloronitrobenzene |
| see F027 | pentachlorophenol |
| U161 | pentanol, 4-methyl- |
| U186 | 1,3-pentadiene (i) |
| U187 | phenacetin |
| U188 | phenol |
| U048 | phenol, 2-chloro- |
| U039 | phenol, 4-chloro-3-methyl- |
| U081 | phenol, 2,4-dichloro- |
| U082 | phenol, 2,6-dichloro- |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|--------------------------------------|---|
| U089 | phenol, 4,4'-(1,2-diethyl- 1,2-ethenediyl)bis- |
| U101 | phenol, 2,4-dimethyl- |
| U052 | phenol, methyl |
| U132 | phenol, 2,2'-methylenebis [3,4,6-trichloro- |
| U170 | phenol, 4-nitro- |
| see F027 | phenol, pentachloro- |
| see F027 | phenol, 2,3,4,6-tetrachloro- |
| see F027 | phenol, 2,4,5-trichloro- |
| see F027 | phenol, 2,4,6-trichloro- |
| U150 | l-phenylalanine, 4- [bis(2-chloroethyl)amino]- |
| U145 | phosphoric acid, lead salt |
| U087 | phosphorodithioic acid, 0,0-diethyl S-methyl ester |
| U189 | phosphorus sulfide (r) |
| U190 | phthalic anhydride |
| U191 | 2-picoline |
| U179 | piperidine, 1-nitroso- |
| U192 | pronamide |
| U194 | 1-propanamine (i,t) |
| U111 | 1-propanamine, n-nitroso-n-propyl- |
| U110 | 1-propanamine, n-propyl- (i) |
| U066 | propane, 1,2-dibromo-3-chloro- |
| U083 | propane, 1,2-dichloro- |
| U149 | propanedinitrile |
| U171 | propane, 2-nitro- (i,t) |
| U027 | propane, 2,2-oxybis[2-chloro- |
| U193 | 1,3-propane sultone |
| see F027 | propanoic acid, 2-(2,4,5- trichlorophenoxy)- |
| U235 | 1-propanol, 2,3-dibromo-, phosphate (3:1) |
| U140 | 1-propanol, 2-methyl- (i,t) |
| U002 | 2-propanone (i) |
| U007 | 2-propenamide |
| U084 | 1-propene, 1,3-dichloro- |
| U243 | 1-propene, 1,1,2,3,3,3-hexachloro- |
| U009 | 2-propenenitrile |
| U152 | 2-propanenitrile, 2-methyl- (i,t) |
| U008 | 2-propenoic acid (i) |
| U113 | 2-propenic acid, ethyl ester (i) |
| U118 | 2-propenoic acid, 2-methyl-, ethyl ester |
| U162 | 2-propenoic acid, 2-methyl-, methyl ester (i,t) |
| U194 | n-propylamine (i,t) |

Appendix 4-2 (continued)

| USEPA Hazardous Waste No. | Substance |
|--------------------------------------|--|
| U083 | propylene dichloride |
| U148 | 3,6-pyridazinedione, 1,2-dihydro- |
| U196 | pyridine |
| U191 | pyridine, 2-methyl- |
| U237 | 2,4(1H,3H)-pyrimidinedione, 5- [bis(2-chloroethyl)amino]- |
| U164 | 4(1H)-pyrimidinone, 2,3-dihydro-6-methyl 2-thioxo- |
| U180 | pyrrolidine, 1-nitroso-- |
| U200 | reserpine |
| U201 | resorcinol |
| U202 | saccharin and salts |
| U203 | safrole |
| U204 | selenious acid |
| U204 | selenium dioxide |
| U205 | selenium sulfide |
| U205 | selenium sulfide SeS2 (r,t) |
| U015 | l-serine, diazoacetate (ester) |
| see F027 | silvex (2,4,5-tp) |
| U206 | streptozotocin |
| U103 | sulfuric acid, dimethyl ester |
| U189 | sulfur phosphide (r) |
| U232 | 2,4,5-T |
| U207 | 1,2,4,5-tetrachlorobenzene |
| U208 | 1,1,1,2-tetrachloroethane |
| U209 | 1,1,2,2-tetrachloroethane |
| U210 | tetrachloroethylene |
| see F027 | 2,3,4,6-tetrachlorophenol |
| U213 | tetrahydrofuran (i) |
| U214 | thallium (i) acetate |
| U215 | thallium (i) carbonate |
| U216 | thallium chloride |
| U216 | thallium chloride TlCl |
| U217 | thallium (i) nitrate |
| U218 | thioacetamide |
| U153 | thiomethanol (i,t) |
| U244 | thioperoxydicarbonic diamide, tetramethyl- |
| U219 | thiourea |
| U244 | thiuram |
| U220 | toluene |
| U221 | toluenediamine |
| U223 | toluene diisocyanate (r,t) |
| U328 | o-toluidine |
| U353 | p-toluidine |
| U222 | o-toluidine hydrochloride |
| U011 | 1H-1,2,4-triazol-3-amine |
| U227 | 1,1,2-trichloroethane |

Appendix 4-2 (continued)

**USEPA Hazardous
Waste No.**

Substance

| | |
|------|--|
| U228 | trichloroethylene |
| U121 | trichloromonofluoromethane |
| U230 | 2,4,5-trichlorophenol |
| U231 | 2,4,6-trichlorophenol |
| U234 | 1,3,5-trinitrobenzene (r,t) |
| U182 | 1,3,5-trioxane, 2,4,6-trimethyl- |
| U235 | tris(2,3-dibromopropyl)phosphate |
| U236 | trypan blue |
| U237 | uracil mustard |
| U176 | urea, n-ethyl-n-nitroso- |
| U177 | urea, n-methyl-n-nitroso- |
| U043 | vinyl chloride |
| U248 | Warfarin, when present at concentrations of .3% or less |
| U239 | xylene (i) |
| U200 | yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5- trimethoxy-benzoyl)oxy], methyl ester |
| U249 | Zinc phosphide, when present at concentrations of 10% or less. |

Appendix 4-3

Toxicity Characteristics Constituents and Regulatory Levels (40 CFR 261.24)

| USEPA HW No. | Constituent | CAS No. | Chronic toxicity reference level | Regulatory level (mg/L) |
|-----------------|--------------------------------|-----------|-------------------------------------|----------------------------|
| D004 | Arsenic | 7440-38-2 | 0.05 | 5.0 |
| D005 | Barium | 7440-39-3 | 1.0 | 100.0 |
| D018 | Benzene | 71-43-2 | 0.005 | 0.5 |
| D006 | Cadmium | 7440-43-9 | 0.01 | 1.0 |
| D019 | Carbon tetrachloride | 56-23-5 | 0.005 | 0.5 |
| D020 | Chlordane | 57-74-9 | 0.0003 | 0.03 |
| D021 | Chlorobenzene | 108-90-7 | 1 | 100.0 |
| D022 | Chloroform | 67-66-3 | 0.06 | 6.0 |
| D007 | Chromium | 7440-47-3 | 0.05 | 5.0 |
| D023 | o-Cresol | 95-48-7 | 2 | 200.0 ¹ |
| D024 | m-Cresol | 108-39-4 | 2 | 200.0 ¹ |
| D025 | p-Cresol | 106-44-5 | 2 | 200.0 |
| D026 | Cresol | | 2 | 200.0 ¹ |
| D016 | 2,4-D | 94-75-7 | 0.1 | 10.0 |
| D027 | 1,4-Dichlorobenzene | 106-46-7 | 0.075 | 7.5 |
| D028 | 1,2-Dichloroethane | 107-06-2 | 0.005 | 0.5 |
| D029 | 1,1-Dichloroethylene | 75-35-4 | 0.007 | 0.7 |
| D030 | 2,4-Dinitrotoluene | 121-14-2 | 0.0005 | 0.13 ² |
| D012 | Endrin | 72-20-8 | 0.0002 | 0.02 |
| D031 | Heptachlor (and its hydroxide) | 76-44-8 | 0.00008 | 0.008 |
| D032 | Hexachlorobenzene | 118-74-1 | 0.0002 | 0.13 ² |
| D033 | Hexachloro-1,3-butadiene | 87-68 | 3 | 0.005 |
| D034 | Hexachloroethane | 67-72-1 | 0.03 | 3.0 |
| D008 | Lead | 7439-92-1 | 0.05 | 5.0 |
| D013 | Lindane | 58-89-9 | 0.004 | 0.4 |
| D009 | Mercury | 7439-97-6 | 0.002 | 0.2 |
| D014 | Methoxychlor | 72-43-5 | 0.1 | 10.0 |
| D035 | Methyl ethyl ketone | 78-93-3 | 2 | 200.0 |
| D036 | Nitrobenzene | 98-95-3 | 0.02 | 2.0 |
| D037 | Pentachlorophenol | 87-86-5 | 1 | 100.0 |
| D038 | Pyridine | 110-86-1 | 0.04 | 5.0 ² |
| D010 | Selenium | 7782-49-2 | 0.01 | 1.0 |
| D011 | Silver | 7440-22-4 | 0.05 | 5.0 |
| D039 | Tetrachloroethylene | 127-18-4 | 0.007 | 0.7 |
| D015 | Toxaphene | 8001-35-2 | 0.005 | 0.5 |
| D040 | Trichloroethylene | 79-01-6 | 0.005 | 0.5 |
| D041 | 2,4,5-Trichlorophenol | 95-95-4 | 4 | 400.0 |
| D042 | 2,4,6-Trichlorophenol | 88-06-2 | 0.02 | 2.0 |
| D017 | 2,4,5-TP (Silvex) | 93-72-1 | 0.01 | 1.0 |
| D043 | Vinyl chloride | 75-01-4 | 0.002 | 0.2 |

¹ If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used.

² Quantitation limit is greater than the calculated regulatory level. Therefore, the quantitation limit becomes the regulatory level.

Source: Federal register 55:61, pg. 11804

Appendix 4-4

Land Disposal Restricted Wastes and Their Effective Dates 40 CFR 268, Appendix VII

Part 1--Land Disposal Restricted Wastes and Their Effective Dates

| Waste Code | Waste Category | Effective Date |
|-----------------------|--|-----------------|
| California list | Liquid hazardous wastes, including free liquids associated with solid or sludge, containing free cyanides at concentrations greater than or equal to 1000 mg/L or certain metals or compounds of these metals greater than or equal to the prohibition levels. | 8 July 1987 |
| California list | Liquid (aqueous) hazardous wastes having a pH less than or equal to 2. | 8 July 1987 |
| California list | Dilute HOC wastewaters, defined as HOC-waste mixtures that are primarily water and that contain greater than or equal to 1000 mg/L but less than 10,000 mg/L. | 8 July 1987 |
| California list | Liquid hazardous waste containing PCBs greater than or equal to 50 ppm. | 8 July 1987 |
| California list | Other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1000 mg/L. | 8 November 1988 |
| D001 | All | 8 August 1990 |
| D002 | All | 8 August 1990 |
| D003 | All | 8 August 1990 |
| D004 | Wastewater | 8 August 1990 |
| D005 | Nonwastewater | 8 May 1992 |
| D006 | All | 8 August 1990 |
| D007 | All | 8 August 1990 |
| D007 | All | 8 August 1990 |
| D008 | Lead materials before secondary smelting | 8 May 1992 |
| D008 | All others | 8 August 1990 |
| D009 | Nonwastewater | 8 May 1992 |
| D010 | All | 8 August 1990 |
| D011 | All | 8 August 1990 |
| D012 | All | 8 August 1990 |
| D013 | All | 8 August 1990 |
| D014 | All | 8 August 1990 |
| D015 | All | 8 August 1990 |
| D016 | All | 8 August 1990 |
| D017 | All | 8 August 1990 |
| F001 | SQGs, <i>CERCLA</i> response/ <i>RCRA</i> corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids. | 8 November 1988 |
| F001 | All others | 8 November 1986 |
| F002(1.1.2 ethane) | -trichloro- Wastewater and nonwastewater | 8 August 1990 |
| F002 | SQGs, <i>CERCLA</i> response/ <i>RCRA</i> corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids. | 8 November 1988 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|--|---|-----------------|
| F002 | All others | 8 November 1986 |
| F003 | SQGs, <i>CERCLA</i> response/ <i>RCRA</i> corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids. | 8 November 1988 |
| F003 | All others | 8 November 1986 |
| F004 | SQGs, <i>CERCLA</i> response/ <i>RCRA</i> corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and solids. | 8 November 1988 |
| F004 | All others | 8 November 1986 |
| F005 (benzene, 2-ethoxy ethanol, 2-nitropropane) | Wastewater and nonwastewater | 8 August 1990 |
| F005 | SQGs, <i>CERCLA</i> response/ <i>RCRA</i> corrective action, initial generator's solvent-water mixtures, solvent-containing sludges and soils. | 8 November 1988 |
| F005 | All others | 8 November 1986 |
| F006 | Wastewater | 8 August 1990 |
| F006 | Nonwastewater | 8 August 1988 |
| F006 (cyanides) | Nonwastewater | 8 July 1989 |
| F007 | All | 8 July 1989 |
| F008 | All | 8 July 1989 |
| F009 | All | 8 July 1989 |
| F010 | All | 8 June 1989 |
| F011 (cyanides) | Nonwastewater | 8 December 1986 |
| F011 | All others | 8 July 1989 |
| F012 (cyanides) | Nonwastewater | 8 December 1989 |
| F012 | All others | 8 July 1989 |
| F019 | All | 8 August 1990 |
| F020 | All | 8 November 1988 |
| F021 | All | 8 November 1988 |
| F022 | All | 8 November 1988 |
| F023 | All | 8 November 1988 |
| F024 (metals) | Wastewater | 8 June 1989 |
| F024 (metals) | Nonwastewater | 8 August 1990 |
| F024 ^b | All others | 8 June 1989 |
| F025 | All | 8 August 1990 |
| F026 | All | 8 November 1988 |
| F027 | All | 8 November 1988 |
| F028 | All | 8 November 1988 |
| FO37 | Other than from surface impoundments | 30 June 1993 |
| FO37 | All | 30 June 1994 |
| FO38 | Other than from surface impoundments | 30 June 1993 |
| FO38 | All | 30 June 1994 |
| F039 | Wastewater | 8 August 1990 |
| F039 | Nonwastewater | 8 May 1992 |
| K001 (organics) ^b | All | 8 August 1988 |
| K001 | All others | 8 August 1988 |
| K002 | All | 8 August 1990 |
| K003 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|-------------------|----------------|----------------|
| K004 | Wastewater | 8 August 1990 |
| K004 ^c | Nonwastewater | 8 August 1990 |
| K005 | Wastewater | 8 August 1990 |
| K005 ^c | Nonwastewater | 8 June 1989 |
| K006 | All | 8 August 1990 |
| K007 | Wastewater | 8 August 1990 |
| K007 ^c | Nonwastewater | 8 June 1989 |
| K008 | Wastewater | 8 August 1990 |
| K008 ^c | Nonwastewater | 8 August 1988 |
| K009 | All | 8 June 1989 |
| K010 | All | 8 June 1989 |
| K011 | Wastewater | 8 August 1990 |
| K011 | Nonwastewater | 8 June 1989 |
| K013 | Wastewater | 8 August 1990 |
| K013 | Nonwastewater | 8 June 1989 |
| K014 | Wastewater | 8 August 1990 |
| K014 | Nonwastewater | 8 June 1989 |
| K015 | Wastewater | 8 August 1988 |
| K015 | Nonwastewater | 8 August 1990 |
| K016 | All | 8 August 1988 |
| K017 | All | 8 August 1990 |
| K018 | All | 8 August 1988 |
| K019 | All | 8 August 1988 |
| K020 | All | 8 August 1988 |
| K021 | Wastewater | 8 August 1990 |
| K021 ^c | Nonwastewater | 8 August 1988 |
| K022 | Wastewater | 8 August 1990 |
| K022 | Nonwastewater | 8 August 1988 |
| K023 | All | 8 June 1989 |
| K024 | All | 8 August 1988 |
| K025 | Wastewater | 8 August 1990 |
| K025 ^c | Nonwastewater | 8 August 1988 |
| K026 | All | 8 August 1990 |
| K027 | All | 8 June 1989 |
| K028 (metals) | Nonwastewater | 8 August 1990 |
| K028 | All others | 8 June 1989 |
| K029 | Wastewater | 8 August 1990 |
| K029 | Nonwastewater | 8 June 1989 |
| K030 | All | 8 August 1990 |
| K031 | Wastewater | 8 August 1990 |
| K031 | Nonwastewater | 8 May 1992 |
| K032 | All | 8 August 1990 |
| K033 | All | 8 August 1990 |
| K034 | All | 8 August 1990 |
| K035 | All | 8 August 1990 |
| K036 | Wastewater | 8 June 1989 |
| K036 ^c | Nonwastewater | 8 August 1988 |
| K037 ^b | Wastewater | 8 August 1988 |
| K037 | Nonwastewater | 8 August 1988 |
| K038 | All | 8 June 1989 |
| K039 | All | 8 June 1989 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|---|---|-----------------|
| K040 | All | 8 June 1989 |
| K041 | All | 8 August 1990 |
| K042 | All | 8 August 1990 |
| K043 | All | 8 June 1989 |
| K044 ^c | All | 8 August 1988 |
| K045 ^c | all | 8 August 1988 |
| K046 (Nonreactive) | Nonwastewater | 8 August 1988 |
| K046 | All others | 8 August 1990 |
| K047 | All | 8 August 1988 |
| K048 | Wastewater | 8 August 1990 |
| K048 | Nonwastewater | 8 November 1990 |
| K049 | Wastewater | 8 August 1990 |
| K049 | Nonwastewater | 8 November 1990 |
| K050 | Wastewater | 8 August 1990 |
| K050 | Nonwastewater | 8 November 1990 |
| K051 | Wastewater | 8 August 1990 |
| K051 | Nonwastewater | 8 November 1990 |
| K052 | Wastewater | 8 August 1990 |
| K052 | Nonwastewater | 8 November 1990 |
| K060 | Wastewater | 8 August 1990 |
| K060 ^c | Nonwastewater | 8 August 1988 |
| K061 | Wastewater | 8 August 1990 |
| K06i | Nonwastewater (low zinc) (interim standard for high zinc remains in effect until 7 August 1991). | 8 August 1988 |
| K062 | All | 8 August 1988 |
| K069 (Non-Calcium Sulfate) ^c | Nonwastewater | 8 August 1988 |
| K069 | All others | 8 August 1990 |
| K071 | All | 8 August 1990 |
| K073 | All | 8 August 1990 |
| K083 | All | 8 August 1990 |
| K084 | Wastewater | 8 August 1990 |
| K084 | Nonwastewater | 8 May 1992 |
| K085 | All | 8 August 1990 |
| K086 (organics) ^b | All | 8 August 1988 |
| K086 | All others | 8 August 1988 |
| K087 | All | 8 August 1988 |
| K093 | All | 8 June 1989 |
| K094 | All | 8 June 1989 |
| K095 | Wastewater | 8 August 1990 |
| K095 | Nonwastewater | 8 June 1989 |
| K096 | Wastewater | 8 August 1990 |
| K096 | Nonwastewater | 8 June 1989 |
| K097 | All | 8 August 1990 |
| K098 | All | 8 August 1990 |
| K099 | All | 8 August 1988 |
| K100 | Wastewater | 8 August 1990 |
| K100 ^c | Nonwastewater | 8 August 1988 |
| K101 (organics) | Wastewater | 8 August 1988 |
| K101 (metals) | Wastewater | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|-----------------|----------------|-----------------|
| K101 (organics) | Nonwastewater | 8 August 1988 |
| K101 (metals) | Nonwastewater | 8 May 1992 |
| K102 (organics) | Wastewater | 8 August 1988 |
| K102 (metals) | Wastewater | 8 August 1990 |
| K102 (organics) | Nonwastewater | 8 August 1988 |
| K102 (metals) | Nonwastewater | 8 May 1992 |
| K103 | All | 8 August 1988 |
| K104 | All | 8 August 1988 |
| K105 | All | 8 August 1990 |
| K106 | Wastewater | 8 August 1990 |
| K106 | Nonwastewater | 8 May 1992 |
| K107 | All | 8 November 1992 |
| K108 | All | 8 November 1992 |
| K109 | All | 8 November 1992 |
| K110 | All | 9 November 1992 |
| K111 | All | 9 November 1992 |
| K112 | All | 9 November 1992 |
| K113 | All | 8 June 1989 |
| K114 | All | 8 June 1989 |
| K115 | All | 8 June 1989 |
| K116 | All | 8 June 1989 |
| K117 | All | 9 November 1992 |
| K118 | All | 9 November 1992 |
| K123 | All | 9 November 1992 |
| K124 | All | 9 November 1992 |
| K125 | All | 9 November 1992 |
| K126 | All | 9 November 1992 |
| K131 | All | 9 November 1992 |
| K132 | All | 9 November 1992 |
| K136 | All | 9 November 1992 |
| P001 | All | 8 August 1990 |
| P002 | All | 8 August 1990 |
| P003 | All | 8 August 1990 |
| P004 | All | 8 August 1990 |
| P005 | All | 8 August 1990 |
| P006 | All | 8 August 1990 |
| P007 | All | 8 August 1990 |
| P008 | All | 8 August 1990 |
| P009 | All | 8 August 1990 |
| P010 | Wastewater | 8 August 1990 |
| P010 | Nonwastewater | 8 May 1992 |
| P011 | Wastewater | 8 August 1990 |
| P011 | Nonwastewater | 8 May 1992 |
| P012 | Wastewater | 8 August 1990 |
| P012 | Nonwastewater | 8 May 1992 |
| P013 (barium) | Nonwastewater | 8 August 1990 |
| P013 | All others | 8 June 1989 |
| P014 | All | 8 August 1990 |
| P015 | All | 8 August 1990 |
| P016 | All | 8 August 1990 |
| P017 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|------------|----------------|----------------|
| P018 | All | 8 August 1990 |
| P020 | All | 8 August 1990 |
| P021 | All | 8 June 1989 |
| P022 | All | 8 August 1990 |
| P023 | All | 8 August 1990 |
| P024 | All | 8 August 1990 |
| P026 | All | 8 August 1990 |
| P027 | All | 8 August 1990 |
| P028 | All | 8 August 1990 |
| P029 | All | 8 June 1989 |
| P030 | All | 8 June 1989 |
| P031 | All | 8 August 1990 |
| P033 | All | 8 August 1990 |
| P034 | All | 8 August 1990 |
| P036 | Wastewater | 8 August 1990 |
| P036 | Nonwastewater | 8 May 1992 |
| P037 | All | 8 August 1990 |
| P038 | Wastewater | 8 August 1990 |
| P038 | Nonwastewater | 8 May 1992 |
| P039 | All | 8 June 1989 |
| P040 | All | 8 June 1989 |
| P041 | All | 8 June 1989 |
| P042 | All | 8 August 1990 |
| P043 | All | 8 June 1989 |
| P044 | All | 8 June 1989 |
| P045 | All | 8 August 1990 |
| P046 | All | 8 August 1990 |
| P047 | All | 8 August 1990 |
| P048 | All | 8 August 1990 |
| P049 | All | 8 August 1990 |
| P050 | All | 8 August 1990 |
| P051 | All | 8 August 1990 |
| P054 | All | 8 August 1990 |
| P056 | All | 8 August 1990 |
| P057 | All | 8 August 1990 |
| P058 | All | 8 August 1990 |
| P059 | All | 8 August 1990 |
| P060 | All | 8 August 1990 |
| P062 | All | 8 June 1989 |
| P063 | All | 8 June 1989 |
| P064 | All | 8 August 1990 |
| P065 | Wastewater | 8 August 1990 |
| P065 | Nonwastewater | 8 May 1992 |
| P066 | All | 8 August 1990 |
| P067 | All | 8 August 1990 |
| P068 | All | 8 August 1990 |
| P069 | All | 8 August 1990 |
| P070 | All | 8 August 1990 |
| P071 | All | 8 June 1989 |
| P072 | All | 8 August 1990 |
| P073 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|-------------------|-----------------------|-----------------------|
| P074 | All | 8 June 1989 |
| P075 | All | 8 August 1990 |
| P076 | All | 8 August 1990 |
| P077 | All | 8 August 1990 |
| P078 | All | 8 August 1990 |
| P079 | All | 8 August 1990 |
| P081 | All | 8 August 1990 |
| P082 | All | 8 August 1990 |
| P084 | All | 8 August 1990 |
| P085 | All | 8 June 1989 |
| P087 | All | 8 May 1992 |
| P088 | All | 8 August 1990 |
| P089 | All | 8 June 1989 |
| P092 | Wastewater | 8 August 1990 |
| P092 | Nonwastewater | 8 May 1992 |
| P093 | All | 8 August 1990 |
| P094 | All | 8 June 1989 |
| P095 | All | 8 August 1990 |
| P096 | All | 8 August 1990 |
| P099 (silver) | Wastewater | 8 August 1990 |
| P099 | All others | 8 June 1989 |
| P101 | All | 8 August 1990 |
| P102 | All | 8 August 1990 |
| P103 | All | 8 August 1990 |
| P104 (silver) | Wastewater | 8 August 1990 |
| P104 | All others | 8 June 1989 |
| P105 | All | 8 August 1990 |
| P106 | All | 8 June 1989 |
| P108 | All | 8 August 1990 |
| P109 | All | 8 June 1989 |
| P110 | All | 8 August 1990 |
| P111 | All | 8 June 1989 |
| P112 | All | 8 August 1990 |
| P113 | All | 8 August 1990 |
| P114 | All | 8 August 1990 |
| P115 | All | 8 August 1990 |
| P116 | All | 8 August 1990 |
| P118 | All | 8 August 1990 |
| P119 | All | 8 August 1990 |
| P120 | All | 8 August 1990 |
| P121 | All | 8 June 1989 |
| P122 | All | 8 August 1990 |
| P123 | All | 8 August 1990 |
| U001 | All | 8 August 1990 |
| U002 | All | 8 August 1990 |
| U003 | All | 8 August 1990 |
| U004 | All | 8 August 1990 |
| U005 | All | 8 August 1990 |
| U006 | All | 8 August 1990 |
| U007 | All | 8 August 1990 |
| U008 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|------------|----------------|----------------|
| U009 | All | 8 August 1990 |
| U010 | All | 8 August 1990 |
| U011 | All | 8 August 1990 |
| U012 | All | 8 August 1990 |
| U014 | All | 8 August 1990 |
| U015 | All | 8 August 1990 |
| U016 | All | 8 August 1990 |
| U017 | All | 8 August 1990 |
| U018 | All | 8 August 1990 |
| U019 | All | 8 August 1990 |
| U020 | All | 8 August 1990 |
| U021 | All | 8 August 1990 |
| U022 | All | 8 August 1990 |
| U023 | All | 8 August 1990 |
| U024 | All | 8 August 1990 |
| U025 | All | 8 August 1990 |
| U026 | All | 8 August 1990 |
| U027 | All | 8 August 1990 |
| U028 | All | 8 June 1989 |
| U029 | All | 8 August 1990 |
| U030 | All | 8 August 1990 |
| U031 | All | 8 August 1990 |
| U032 | All | 8 August 1990 |
| U033 | All | 8 August 1990 |
| U034 | All | 8 August 1990 |
| U035 | All | 8 August 1990 |
| U036 | All | 8 August 1990 |
| U037 | All | 8 August 1990 |
| U038 | All | 8 August 1990 |
| U039 | All | 8 August 1990 |
| U041 | All | 8 August 1990 |
| U042 | All | 8 August 1990 |
| U043 | All | 8 August 1990 |
| U044 | All | 8 August 1990 |
| U045 | All | 8 August 1990 |
| U046 | All | 8 August 1990 |
| U047 | All | 8 August 1990 |
| U048 | All | 8 August 1990 |
| U049 | All | 8 August 1990 |
| U050 | All | 8 August 1990 |
| U051 | All | 8 August 1990 |
| U052 | All | 8 August 1990 |
| U053 | All | 8 August 1990 |
| U055 | All | 8 August 1990 |
| U056 | All | 8 August 1990 |
| U057 | All | 8 August 1990 |
| U058 | All | 8 June 1989 |
| U059 | All | 8 August 1990 |
| U060 | All | 8 August 1990 |
| U061 | All | 8 August 1990 |
| U062 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|------------|----------------|----------------|
| U063 | All | 8 August 1990 |
| U064 | All | 8 August 1990 |
| U066 | All | 8 August 1990 |
| U067 | All | 8 August 1990 |
| U068 | All | 8 August 1990 |
| U069 | All | 8 June 1989 |
| U070 | All | 8 August 1990 |
| U071 | All | 8 August 1990 |
| U072 | All | 8 August 1990 |
| U073 | All | 8 August 1990 |
| U074 | All | 8 August 1990 |
| U075 | All | 8 August 1990 |
| U076 | All | 8 August 1990 |
| U077 | All | 8 August 1990 |
| U078 | All | 8 August 1990 |
| U079 | All | 8 August 1990 |
| U080 | All | 8 August 1990 |
| U081 | All | 8 August 1990 |
| U082 | All | 8 August 1990 |
| U083 | All | 8 August 1990 |
| U084 | All | 8 August 1990 |
| U084 | All | 8 August 1990 |
| U085 | All | 8 August 1990 |
| U086 | All | 8 August 1990 |
| U087 | All | 8 June 1989 |
| U088 | All | 8 June 1989 |
| U089 | All | 8 August 1990 |
| U090 | All | 8 August 1990 |
| U091 | All | 8 August 1990 |
| U092 | All | 8 August 1990 |
| U093 | All | 8 August 1990 |
| U094 | All | 8 August 1990 |
| U095 | All | 8 August 1990 |
| U096 | All | 8 August 1990 |
| U097 | All | 8 August 1990 |
| U098 | All | 8 August 1990 |
| U099 | All | 3 August 1990 |
| U101 | All | 8 August 1990 |
| U101 | All | 8 June 1989 |
| U103 | All | 8 August 1990 |
| U105 | All | 8 August 1990 |
| U106 | All | 8 August 1990 |
| U107 | All | 8 June 1989 |
| U108 | All | 8 August 1990 |
| U109 | All | 8 August 1990 |
| U110 | All | 8 August 1990 |
| U111 | All | 8 August 1990 |
| U112 | All | 8 August 1990 |
| U113 | All | 8 August 1990 |
| U114 | All | 8 August 1990 |
| U115 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|------------|----------------|----------------|
| U116 | All | 8 August 1990 |
| U117 | All | 8 August 1990 |
| U118 | All | 8 August 1990 |
| U119 | All | 8 August 1990 |
| U120 | All | 8 August 1990 |
| U121 | All | 8 August 1990 |
| U122 | All | 8 August 1990 |
| U123 | All | 8 August 1990 |
| U124 | All | 8 August 1990 |
| U125 | All | 8 August 1990 |
| U126 | All | 8 August 1990 |
| U127 | All | 8 August 1990 |
| U128 | All | 8 August 1990 |
| U129 | All | 8 August 1990 |
| U130 | All | 8 August 1990 |
| U131 | All | 8 August 1990 |
| U132 | All | 8 August 1990 |
| U133 | All | 8 August 1990 |
| U134 | All | 8 August 1990 |
| U135 | All | 8 August 1990 |
| U136 | Wastewater | 8 August 1990 |
| U136 | Nonwastewater | 8 May 1992 |
| U137 | All | 8 August 1990 |
| U138 | All | 8 August 1990 |
| U140 | All | 8 August 1990 |
| U141 | All | 8 August 1990 |
| U142 | All | 8 August 1990 |
| U143 | All | 8 August 1990 |
| U144 | All | 8 August 1990 |
| U145 | All | 8 August 1990 |
| U146 | All | 8 August 1990 |
| U147 | All | 8 August 1990 |
| U148 | All | 8 August 1990 |
| U149 | All | 8 August 1990 |
| U150 | All | 8 August 1990 |
| U151 | Wastewater | 8 August 1990 |
| U151 | Nonwastewater | 8 May 1992 |
| U152 | All | 8 August 1990 |
| U153 | All | 8 August 1990 |
| U154 | All | 8 August 1990 |
| U155 | All | 8 August 1990 |
| U156 | All | 8 August 1990 |
| U157 | All | 8 August 1990 |
| U158 | All | 8 August 1990 |
| U159 | All | 8 August 1990 |
| U160 | All | 8 August 1990 |
| U161 | All | 8 August 1990 |
| U162 | All | 8 August 1990 |
| U163 | All | 8 August 1990 |
| U164 | All | 8 August 1990 |
| U165 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|------------|----------------|----------------|
| U166 | All | 8 August 1990 |
| U167 | All | 8 August 1990 |
| U168 | All | 8 August 1990 |
| U169 | All | 8 August 1990 |
| U170 | All | 8 August 1990 |
| U171 | All | 8 August 1990 |
| U172 | All | 8 August 1990 |
| U173 | All | 8 August 1990 |
| U174 | All | 8 August 1990 |
| U176 | All | 8 August 1990 |
| U177 | All | 8 August 1990 |
| U178 | All | 8 August 1990 |
| U179 | All | 8 August 1990 |
| U180 | All | 8 August 1990 |
| U181 | All | 8 August 1990 |
| U182 | All | 8 August 1990 |
| U183 | All | 8 August 1990 |
| U184 | All | 8 August 1990 |
| U185 | All | 8 August 1990 |
| U186 | All | 8 August 1990 |
| U187 | All | 8 August 1990 |
| U188 | All | 8 August 1990 |
| U189 | All | 8 August 1990 |
| U190 | All | 8 June 1989 |
| U191 | All | 8 August 1990 |
| U192 | All | 8 August 1990 |
| U193 | All | 8 August 1990 |
| U194 | All | 8 August 1990 |
| U196 | All | 8 August 1990 |
| U197 | All | 8 August 1990 |
| U200 | All | 8 August 1990 |
| U201 | All | 8 August 1990 |
| U202 | All | 8 August 1990 |
| U203 | All | 8 August 1990 |
| U204 | All | 8 August 1990 |
| U205 | All | 8 August 1990 |
| U206 | All | 8 August 1990 |
| U207 | All | 8 August 1990 |
| U208 | All | 8 August 1990 |
| U209 | All | 8 August 1990 |
| U210 | All | 8 August 1990 |
| U211 | All | 8 August 1990 |
| U212 | All | 8 August 1990 |
| U213 | All | 8 August 1990 |
| U214 | All | 8 August 1990 |
| U215 | All | 8 August 1990 |
| U216 | All | 8 August 1990 |
| U217 | All | 8 August 1990 |
| U218 | All | 8 August 1990 |
| U219 | All | 8 August 1990 |
| U220 | All | 8 August 1990 |

Appendix 4-4 (continued)

| Waste Code | Waste Category | Effective Date |
|------------|----------------|-----------------|
| U221 | All | 8 June 1989 |
| U222 | All | 8 August 1990 |
| U223 | All | 8 June 1989 |
| U225 | All | 8 August 1990 |
| U226 | All | 8 August 1990 |
| U227 | All | 8 August 1990 |
| U228 | All | 8 August 1990 |
| U234 | All | 8 August 1990 |
| U235 | All | 8 June 1989 |
| U236 | All | 8 August 1990 |
| U237 | All | 8 August 1990 |
| U238 | All | 8 August 1990 |
| U239 | All | 8 August 1990 |
| U240 | All | 8 August 1990 |
| U243 | All | 8 August 1990 |
| U244 | All | 8 August 1990 |
| U246 | All | 8 August 1990 |
| U247 | All | 8 August 1990 |
| U248 | All | 8 August 1990 |
| U249 | All | 8 August 1990 |
| U328 | All | 9 November 1992 |
| U353 | All | 9 November 1992 |
| U359 | All | 9 November 1992 |

^a The previous table does not include mixed radioactive wastes (from the First, Second, and Third rules) that are receiving a national capacity variance until 8 May 1992, for all applicable treatment technologies. This table also does not include contaminated soil and debris wastes.

^b The standard has been revised in the Third Third Final Rule.

^c No land disposal standard has been revised in the Third Third Final Rule.

Appendix 4-4 (continued)

Part 2--Summary of Effective Dates of Land Disposal Restrictions for Contaminated Soil and Debris (CSD)

| Restricted hazardous waste in CSD | Effective date |
|---|-----------------|
| 1. Solvent-(F001-F005) and dioxin-(F020-F023 and F026-F028) containing soil and debris from <i>CERCLA</i> response of <i>RCRA</i> corrective actions. | 8 November 1990 |
| 2. Soil and debris not from <i>CERCLA</i> response or <i>RCRA</i> corrective actions contaminated with less than 1 percent total solvents (F001-F005) or dioxins (F020-F023 and F026-F028). | 8 November 1990 |
| 3. Soil and debris contaminated with California list HOCs from <i>CERCLA</i> response or <i>RCRA</i> corrective actions. | 8 November 1990 |
| 4. Soil and debris contaminated with California list HOCs not from <i>CERCLA</i> response or <i>RCRA</i> corrective actions. | 8 July 1989 |
| 5. All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration. | 8 August 1990 |
| 6. All soil and debris contaminated with Second Third wastes for which treatment standards are based on incineration. | 8 June 1991 |
| 7. All soil and debris contaminated with Third Third wastes or First or Second Third "soft hammer" wastes which had treatment standards promulgated in the Third Third rule, for which treatment standards are based on incineration, vitrification, or mercury retorting, acid leaching followed by chemical precipitation, or thermal recovery of metals; as well as all inorganic solids debris contaminated with D004-D011 wastes, and all soil and debris contaminated with mixed <i>RCRA</i> /radioactive wastes. | 8 May 1992 |

NOTE: 1. Appendix VII is provided for the convenience of the reader. 2. Contaminated Soil and Debris Rule will be promulgated in the future.

Appendix 4-5

Commercial Chemical Products or Manufacturing Chemical Intermediates Identified as Acute Hazardous Waste

40 CFR 261.33(a) through 261.33(e)

(COMMENT: primary hazardous properties of these materials have been indicated by the letters (t) (toxicity), and (r) (reactivity); absence of a letter indicates that the compound only is listed for acute toxicity.)

| Hazardous Waste No. | Substance |
|------------------------|---|
| P023 | Acetaldehyde, chloro- |
| P002 | Acetamide, N-(aminothioxomethyl)- |
| P057 | Acetamide, 2-fluoro- |
| P058 | Acetic acid, fluoro-, sodium salt |
| P002 | 1-Acetyl-2-thiourea |
| P003 | Acrolein |
| P070 | Aldicarb |
| P004 | Aldrin |
| P005 | Allyl alcohol |
| P006 | Aluminum phosphide |
| P007 | 5-(Aminomethyl)-3-isoxazolol |
| P008 | 4-Aminopyridine |
| P009 | Ammonium picrate |
| P119 | Ammonium vanadate |
| P099 | Argebtate(1), bisticyno-C)-, potassium |
| P010 | Arsenic acid |
| P012 | Arsenic oxide As ₂ O ₃ |
| P011 | Arsenic oxide As ₂ O ₅ |
| P011 | Arsenic pentoxide |
| P012 | Arsenic trioxide |
| P038 | Arsine, diethyl |
| P036 | Arsonous dichloride, phenyl |
| P054 | Aziridine |
| P067 | Aziridine, 2-methyl |
| P013 | Barium cyanide |
| P024 | Benzenamine, 4-chloro- |
| P077 | Benzenamine, 4-nitro- |
| P028 | Benzene, (chloromethyl)- |
| P042 | 1,2-Benzenediol, 4-[1-hydroxy- 2-(methylamino)ethyl]- |
| P046 | Benzeneethanamine, alpha, alpha- dimethyl- |
| P014 | Benzenethiol |
| P001 | 2H-1-Benzopyran-2-one, 4-hydroxy-3- (3-oxo-1-phenylbutyl)-, and salts when present at concentrations greater than 0.3% |

Appendix 4-5 (continued)

| Hazardous Waste No. | Substance |
|------------------------|---|
| P028 | Benzyl chloride |
| P015 | Beryllium |
| P016 | Bis(chloromethyl)ether |
| P017 | Bromoacetone |
| P018 | Brucine |
| P021 | Calcium cyanide |
| P021 | Calcium cyanide $\text{Ca}(\text{CN})_2$ |
| P022 | Carbon disulfide |
| P095 | Carbonic dichloride |
| P023 | Chloroacetaldehyde |
| P024 | p-Chloroaniline |
| P026 | 1-(o-Chlorophenyl)thiourea |
| P027 | 3-Chloropropionitrile |
| P029 | Copper cyanide |
| P029 | Copper cyanide $\text{Cu}(\text{CN})$ |
| P030 | Cyanides (soluble cyanide salts), n.o.s. |
| P031 | Cyanogen |
| P033 | Cyanogen chloride |
| P033 | Cyanogen chloride $(\text{CN})\text{Cl}$ |
| P034 | 2-Cyclohexyl-4,6-dinitrophenol |
| P016 | Dichloromethyl ether |
| P036 | Dichlorophenylarsine |
| P037 | Dieldrin |
| P038 | Diethylarsine |
| P041 | Diethyl-p-nitrophenyl phosphate |
| P040 | O,O-Diethyl O-pyrazinyl phosphorothioate |
| P043 | Diisopropyl fluorophosphate (DEP) |
| P004 | 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a- hexahydro-, (1alpha,4alpha,4abeta,5alpha, 8alpha,8abeta)- |
| P060 | 1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a- hexahydro-, (1alpha,4alpha,4abeta,5beta, 8beta,8abeta)- |
| P037 | 2,7:3,6-Dimethanonaph[2,3b]oxirane, 3,4,5,6,9,9-hexachloro-1a,2,2a,3, 6,6a,7,7a-octahydro-, (1-aalpha, 2beta,2aalpha,3beta,6beta,6aalpha, 7beta,7aalpha)- |
| P051 | 2,7:3,6-Dimethanonaph[2,3b]oxirane, octahydro-, (1aalpha,2beta,2abeta, 3alpha,6alpha,6abeta,7beta,7aalpha)- |
| P044 | Dimethoate |
| P045 | 3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl]oxime |
| P046 | alpha, alpha-Dimethylphenethylamine |
| P047 | 4,6-Dinitro-o-cresol and salts |
| P048 | 2,4-Dinitrophenol |

Appendix 4-5 (continued)

| Hazardous Waste No. | Substance |
|------------------------|---|
| P020 | Dinoseb |
| P085 | Diphosphoramidate, octamethyl- |
| P111 | Diphosphoric acid, tetraethyl ester |
| P039 | Disulfoton |
| P049 | Dithiobiuret |
| P050 | Endosulfan |
| P088 | Endothall |
| P051 | Endrin |
| P051 | Endrin and metabolites |
| P042 | Epinephrine |
| P031 | Ethanedinitrile |
| P066 | Ethanimidothioic acid, N-[(methylamino)carbonyl oxy]-, methyl ester |
| P101 | Ethyl cyanide |
| P054 | Ethyleneimine |
| P097 | Famphur |
| P056 | Fluorine |
| P057 | Fluoroacetamide |
| p058 | Fluoroacetic acid, sodium salt |
| p065 | Fulminic acid, mercury(2+) salt |
| P059 | Heptachlor |
| P062 | Hexaethyl tetraphosphate |
| p116 | Hydrazinecarbothioamide |
| P068 | Hydrazine, methyl- |
| P063 | Hydrocyanic acid |
| P063 | Hydrogen cyanide |
| P096 | Hydrogen phosphide |
| P064 | Isocyanic acid, methyl ester |
| P060 | Isodrin |
| P007 | 3(2H)-Isoxazolone, 5-(aminomethyl)- |
| P092 | Mercury (acetato-O)phenyl- |
| P065 | Mercury fulminate |
| P082 | Methanamine, N-methyl-N-nitroso |
| P064 | Methane, isocyanato- |
| P016 | Methane, oxybis[chloro- |
| P112 | Methane, tetranitro- |
| P118 | Methanethiol, trichloro- |
| P050 | 6,9-Methano-2,4,3-benzodioxathlepen, 6,7,8,9,10,10-hexachloro- 1,5,5a,6,9,9a-hexahydro-,3-oxide |
| P059 | 4,7-Methano-1H-indene, 1,4,5,6,7,8,8- heptachloro-3a,4,7,7a-tetrahydro- |
| P066 | Methomyl |
| P068 | Methyl hydrazine |
| P064 | Methyl isocyanate |
| P069 | 2-Methylactonitrile |
| P071 | Methyl parathion |
| P072 | alpha-Naphthylthiourea |
| P073 | Nickel carbonyl |

Appendix 4-5 (continued)

| Hazardous Waste No. | Substance |
|--------------------------------|---|
| P073 | Nickel carbonyl, (T-4)- |
| P074 | Nickel cyanide |
| P074 | Nickel cyanide Ni (CN) ₂ |
| P075 | Nicotine and salts |
| P076 | Nitric oxide |
| P077 | p-Nitroaniline |
| P078 | Nitrogen dioxide |
| P076 | Nitrogen oxide NO |
| P078 | Nitrogen oxide |
| P081 | Nitroglycerine |
| P082 | N-Nitrosodimethylamine |
| P084 | N-Nitrosomethylvinylamine |
| P074 | Nickel cyanide |
| P085 | Octamethylpyrophosphoramidate |
| P087 | Osmium oxide |
| P087 | Osmium tetroxide |
| P088 | 7-Oxabicyclo[2.2.1]heptane 2,3- dicarboxylic acid |
| P089 | Parathion |
| P034 | Phenol, 2-cyclohexyl-4,6-dinitro |
| P048 | Phenol, 2,4-dinitro |
| P047 | Phenol, 2-methyl-4,6-dinitro- and salts |
| P020 | Phenol, 2-(1-methylpropyl)-4,6-dinitro |
| P009 | Phenol, 2,4,6-trinitro-, ammonium salt |
| P092 | Phenylmercury acetate |
| P093 | Phenylthiourea |
| P094 | Phorate |
| P095 | Phosgene |
| P096 | Phosphine |
| P041 | Phosphoric acid, diethyl 4- nitrophenyl ester |
| P039 | Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester |
| P094 | Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester |
| P044 | Phosphorodithioic acid, O,O-dimethyl S[2-(methylamino)-2-oxoethyl] ester |
| P043 | Phosphorofluoric acid, bis(1-methylethyl) -ester |
| P089 | Phosphorothioic acid, O,O-diethyl O- (4-nitrophenyl) ester |
| P040 | Phosphorothioic acid, O,O-diethyl O- pyrazinyl ester |

Appendix 4-5 (continued)

| Hazardous Waste No. | Substance |
|------------------------|--|
| P097 | Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester |
| P071 | Phosphorothioic acid, O,O-dimethyl O- (4-nitrophenyl) ester |
| P110 | Plumbane, tetraethyl- |
| P098 | Potassium cyanide |
| P098 | Potassium cyanide K(CN) |
| P099 | Potassium silver cyanide |
| P070 | Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime |
| P101 | Propanenitrile |
| P027 | Propanenitrile, 3-chloro- |
| P069 | Propanenitrile, 2-hydroxy-2-methyl |
| P081 | 1,2,3-Propanetriol, trinitrate |
| P017 | 2-Propanone, 1-bromo- |
| P102 | Propargyl alcohol |
| P003 | 2-Propenal |
| P005 | 2-Propen-1-ol |
| P067 | 1,2-Propylenimine |
| P102 | 2-Propyn-1-ol |
| P008 | 4-Pyridinamine |
| P075 | Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, (S)-, and salts |
| P103 | Selenourea |
| P104 | Silver cyanide |
| P104 | Silver cyanide Ag(CN) |
| P105 | Sodium azide |
| P106 | Sodium cyanide |
| P106 | Sodium cyanide Na(CN) |
| P108 | Strychnidin-10-one, and salts |
| P018 | Strychnidin 10-one, 2,3-dimethoxy- |
| P108 | Strychnine and salts |
| P115 | Sulfuric acid, dithallium(I) salt |
| P109 | Tetraethyldithiopyrophosphate |
| P110 | Tetraethyl lead |
| P111 | Tetraethylpyrophosphate |
| P112 | Tetranitromethane (r) |
| P062 | Tetrphosphoric acid, hexaethyl ester |
| P113 | Thallic oxide |
| P113 | Thallium(III) oxide |
| P114 | Thallium(I) selenite |
| P115 | Thallium(I) sulfate |
| P109 | Thiodiphosphoric acid, tetraethyl ester |
| P045 | Thiofanox |
| P049 | Thiomidodicarbonic diamide |
| P014 | Thiophenol |
| P116 | Thiosemicarbazide |
| P026 | Thiourea, (2-chlorophenyl)- |
| P072 | Thiourea, 1-naphthalenyl- |

Appendix 4-5 (continued)

| Hazardous Waste No. | Substance |
|------------------------|--|
| P093 | Thiourea, phenyl- |
| P123 | Toxaphene |
| P118 | Trichloromethanethiol |
| P119 | Vanadic acid, ammonium salt |
| P120 | Vanadium oxide V_2O_3 |
| P120 | Vanadium pentoxide |
| P084 | Vinylamine, N-methyl-N-nitroso |
| P001 | Warfarin, and salts, when present at concentrations greater than 0.3% |
| P121 | Zinc cyanide |
| P121 | Zinc cyanide $Zn(CN)_2$ |
| P122 | Zinc phosphide Zn_3P_2 , when present at concentrations greater than 0.3% |

Appendix 4-6

Potentially Incompatible Hazardous Wastes

(*Law, Regulations, and Guidelines for Handling of Hazardous Waste*, California Department of Health, February 1975
(40 CFR 264, Appendix V))

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences that result from mixing materials in one group with materials in another group. The list is intended as a guide to indicate the need for special precautions when managing these potentially incompatible waste materials or components. This list is not intended to be exhaustive. Operators must, as the regulations require, adequately analyze their wastes so they can avoid creating uncontrolled substances or reactions of the type listed below, whether listed below or not.

In the lists below, the mixing of a *Group A* material with a *Group B* material may have the potential consequences as noted.

| Group 1-A | Group 1-B |
|--|--|
| Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery acid Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic | Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte, acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid |

Potential Consequences: heat generation; violent reaction.

Appendix 4-6 (continued)

| Group 2-A | Group 2-B |
|---|-------------------------------|
| Aluminum Beryllium Calcium Lithium Magnesium Potassium Sodium Zinc powder Other reactive metals and metal hydrides | Any waste in Group 1-A or 1-B |

Potential Consequences: fire; explosion; generation of flammable hydrogen gas.

| Group 3-A | Group 3-B |
|-------------------|---|
| Alcohols Water | Any concentrated waste in Groups 1-A or 1-B Calcium Lithium Metal hydrides Potassium SO_2Cl_2 , SOCl_2 , PCl_3 , CH_3SiCl_3 Other water-reactive waste |

Potential Consequences: fire; explosion; heat generation; generation of flammable or toxic gases.

| Group 4-A | Group 4-b |
|--|---|
| Alcohols Aldehydes Halogenated hydrocarbons Nitrated hydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents | Concentrated Group 1-A or Group 1-B wastes Group 2-A wastes |

Potential Consequences: fire explosion; violent reaction.

Appendix 4-6 (continued)

| Group 5-A | Group 5-B |
|-------------------------------------|------------------|
| Spent cyanide and sulfide solutions | Group 1-B wastes |

Potential Consequences: generation of toxic hydrogen cyanide or hydrogen sulfide gas.

| Group 6-A | Group 6-B |
|--|---|
| Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers | Acetic acid and other organic acids Concentrated mineral acids Group 2-A wastes Group 4-A wastes Other flammable and combustible wastes |

Potential Consequences: fire; explosion; violent reaction.

Appendix 4-7

Constituent Concentrations in Wastes (CCW) 40 CFR 268.43(a)

| Waste Codes Regulated Hazardous Constituent with Applicable Chemical Abstract Service (CAS) No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| D003 (CAS 57-12-5) (reactive cyanides category-- based on 261.23(a)(5)) | | |
| Cyanides (Total) | Reserved | 590 (3) |
| Cyanides (Amenable) | 0.86 | 30 |
| D004* (CAS 7440-38-2) | | |
| Arsenic | 5.0 | NA |
| D005* (CAS 7440-39-2) | | |
| Barium | 100 | NA |
| D006* (CAS 7440-43-9) | | |
| Cadmium | 1.0 | NA |
| D007* (CAS 7440-47-32) | | |
| Chromium (Total) | 5.0 | NA |
| D008* (CAS 7439-92-1) | | |
| Lead | 5.0 | NA |
| D009* (CAS 7439-97-6) | | |
| Mercury | 0.20 | NA |
| D010* (CAS 7782-49-2) | | |
| Selenium | 1.0 | NA |
| D011* (CAS 7440-22-4) | | |
| Silver | 5.0 | NA |
| D012** (CAS 720-20-8) | | |
| Endrin | NA | 0.13 (1) |
| D013** (CAS 58-89-9) | | |
| Lindane | NA | 0.066 (1) |
| D014** (CAS 72-43-5) | | |
| Methoxychlor | NA | 0.18 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|--|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| D015** (CAS 8001-35-1) Toxaphene | NA | 1.3 (1) |
| D016** (CAS 94-75-7) 2,4-D | NA | 10.0 (1) |
| D017** (CAS 93-76-5) 2,4,5-TP Silvex | NA | 7.9 (1) |
| F001-F005 spent solvents*** 1,1,2-Trichloroethane (CAS 71-55-6) | 0.030 | 7.6 (1) |
| Benzene (CAS 71-43-2) | 0.070 | 3.7 (1) |
| F001-F005 spent solvents (Pharmaceutical industry wastewater subcategory) | | |
| Methylene chloride (CAS 75-09-2) | 0.44 | NA |
| F006* | | |
| Cyanides (Total) (CAS 57-12-5) | 1.2 | 590 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.86 | 30 |
| Cadmium (CAS 7440-43-9) | 1.6 | NA |
| Chromium (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.040 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| F007* | | |
| Cyanides (total) (CAS 57-12-5) | 1.9 | 590 |
| Cyanides (amenable) (CAS 57-12-5) | 0.1 | 30 |
| Chromium (total) (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.04 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| F008* | | |
| Cyanides (total) (CAS 57-12-5) | 1.9 | 590 |
| Cyanides (amenable) (CAS 57-12-5) | 0.1 | 30 |
| Chromium (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.04 | NA |
| Nickel (CAS 7439-92-1) | 0.44 | NA |
| F009* | | |
| Cyanides (total) (CAS 57-12-5) | 1.9 | 590 |
| Cyanides (amenable) (CAS 57-12-5) | 0.1 | 30 |
| Chromium (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.04 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| F010 | | |
| Cyanides (total) (CAS 57-12-5) | 1.9 | 1.5 |
| Cyanides (amenable) (CAS 57-12-5) | 0.1 | NA |
| F011* | | |
| Cyanides (total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (amenable) (CAS 57-12-5) | 0.1 | 9.1 |
| Chromium (total) (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.04 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| F012* | | |
| Cyanides (total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (amenable) (CAS 57-12-5) | 0.1 | 9.1 |
| Chromium (total) (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.04 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| F019* | | |
| Cyanides (total) (CAS 57-12-5) | 1.2 | 590 (3) |
| Cyanides (amenable) (CAS 57-12-5) | 0.86 | 30 (3) |
| Chromium (total) (CAS 7440-47-32) | 0.32 | NA |
| F024** | | |
| (NOTE: F024 organic standards must be treated via incineration (INCIN).) | | |
| 2-Chloro-1,3-butadiene (CAS 126-99-6) | 0.28 (1) | 0.28 (1) |
| 3-Chloropropene (CAS 107-05-1) | 0.28 (1) | 0.28 (1) |
| 1,1-Dichloroethane (CAS 75-34-3) | 0.014 (1) | 0.014 (1) |
| 1,2-Dichloroethane (CAS 107-06-2) | 0.014 (1) | 0.014 (1) |
| 1,2-Dichloropropane (CAS 78-87-5) | 0.014 (1) | 0.014 (1) |
| cis-1,3-Dichloropropene (CAS 10061-01-5) | 0.014 (1) | 0.014 (1) |
| trans-1,3-Dichloropropene (CAS 10061-02-6) | 0.014 (1) | 0.014 (1) |
| Bis(2-ethylhexyl)phthalate (CAS 117-81-7) | 0.036 (1) | 1.8 (1) |
| Hexachlorocyclohexane (CAS 67-72-1) | 0.036 (1) | 1.8 (1) |
| Chromium (total) (CAS 7440-47-32) | 0.35 | NA |
| Nickel (CAS 7440-02-0) | 0.47 | NA |
| F025 (light ends subcategory) | | |
| Chloroform (CAS 67-66-3) | 0.046 (2) | 6.2 (1) |
| 1,2-Dichloroethane (CAS 107-06-2) | 0.21 (2) | 6.2 (1) |
| 1,1-Dichloroethylene (CAS 75-35-4) | 0.025 (2) | 6.2 (1) |
| Methylene chloride (CAS 75-9-2) | 0.089 (2) | 31 (1) |
| Carbon tetrachloride (CAS 56-23-5) | 0.057 (2) | 6.2 (1) |
| 1,1,2-Trichloroethane (CAS 79-00-5) | 0.054 (2) | 6.2 (1) |
| Trichloroethylene (CAS 79-01-6) | 0.054 (2) | 5.6 (1) |
| Vinyl chloride (CAS 75-01-4) | 0.27 (2) | 33 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| F025 (spent filters/aids and desiccants subcategory) | | |
| Chloroform (CAS 67-66-3) | 0.046 (2) | 6.2 (1) |
| Methylene chloride (CAS 75-9-2) | 0.089 (2) | 31 (1) |
| Carbon tetrachloride (CAS 56-23-5) | 0.057 (2) | 6.2 (1) |
| 1,1,2-Trichloroethane (CAS 79-00-5) | 0.054 (2) | 6.2 (1) |
| Trichloroethylene (CAS 79-01-6) | 0.054 (2) | 5.6 (1) |
| Vinyl chloride (CAS 75-01-4) | 0.27 (2) | 33 (1) |
| Hexachlorobenzene (CAS 118-74-1) | 0.055 (2) | 37 (1) |
| Hexachlorobutadiene (CAS 87-68-3) | 0.055 (2) | 28 (1) |
| Hexachloroethane (CAS 67-72-1) | 0.055 (2) | 30 (1) |
| F039** (and D001 and D002 waste prohibited under 268.37) | | |
| Acetone (CAS 67-64-1) | 0.28 (2) | 160 (1) |
| Acenaphthalene (CAS 208-96-8) | 0.059 (2) | 3.4 (1) |
| Acenaphthene (CAS 83-32-9) | 0.059 (2) | 4.0 (1) |
| Acetonitrile (CAS 75-05-8) | 0.17 (2) | NA |
| Acetophenone (CAS 96-86-2) | 0.010 (2) | 9.7 (1) |
| 2-Acetylaminofluorene (CAS 53-96-3) | 0.059 (2) | 140 (1) |
| Acrolein | | |
| Acrylonitrile (CAS 107-02-8) | 0.029 (2) | NA |
| Aldrin (CAS 107-13-1) | 0.24 (2) | 84 (1) |
| (CAS 309-00-2) | 0.021 (2) | 0.066 (1) |
| 4-Aminobiphenyl (CAS 92-67-1) | 0.13 (2) | NA |
| Aniline (CAS 62-53-3) | 0.81 (2) | 14 (1) |
| Anthracene (CAS 120-12-7) | 0.059 (2) | 4.0 (1) |
| Aramite (CAS 140-57-8) | 0.36 (2) | NA |
| Aroclor 1016 (CAS 12674-11-2) | 0.013 (2) | 0.92 (1) |
| Aroclor 1221 (CAS 11104-28-2) | 0.014 (2) | 0.92 (1) |
| Aroclor 1232 (CAS 11141-16-5) | 0.013 (2) | 0.92 (1) |
| Aroclor 1242 (CAS 53469-21-9) | 0.017 (2) | 0.92 (1) |
| Aroclor 1248 (CAS 12672-29-6) | 0.013 (2) | 0.92 (1) |
| Aroclor 1254 (CAS 11097-69-1) | 0.014 (2) | 1.8 (1) |
| Aroclor 1260 (CAS 11096-82-5) | 0.014 (2) | 1.8 (1) |
| alpha-BHC (CAS 319-84-6) | 0.00014 (2) | 0.066 (1) |
| beta-BHC (CAS 319-85-7) | 0.00014 (2) | 0.066 (1) |
| delta-BHC (CAS 319-86-8) | 0.023 (2) | 0.066 (1) |
| gamma-BHC (CAS 58-89-9) | 0.0017 (2) | 0.066 (1) |
| Benzene (CAS 71-34-2) | 0.14 (2) | 36 (1) |
| Benzo(a)anthracene (CAS 56-55-3) | 0.059 (2) | 8.2 (1) |
| Benzo(b)fluoranthene (CAS 205-99-2) | 0.055 (2) | 3.4 (1) |
| Benzo(k)fluoranthene (CAS 207-08-9) | 0.059 (2) | 3.4 (1) |
| Benzo(g,h,i)perylene (CAS 191-24-2) | 0.0055 (2) | 1.5 (1) |
| Benzo(a)pyrene (CAS 5-32-8) | 0.061 (2) | 8.2 (1) |
| Bromodichloromethane (CAS 75-27-4) | 0.35 (2) | 15 (1) |
| Bromoform (CAS 72-25-2) | 0.63 (2) | 15 (1) |
| (Tribromomethane) | | |
| Bromomethane (CAS 74-83-9) | 0.11 (2) | 15 (1) |
| (methyl bromide) | | |
| 4-Bromophenyl phenyl ether (CAS 101-55-3) | 0.055 (2) | 15 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| n-Butyl alcohol (CAS 71-36-3) | 5.6 (2) | 2.6 (1) |
| Butyl benzyl phthalate (CAS 85-68-7) | 0.017 (2) | 7.9 (1) |
| 2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7) | 0.066 (2) | 2.5 (1) |
| Carbon tetrachloride (CAS 56-23-5) | 0.057 (2) | 5.6 (1) |
| Carbon disulfide (CAS 75-15-0) | 0.014 (2) | NA |
| Chlordane (CAS 57-74-9) | 0.0033 (2) | 0.13 (1) |
| p-Chloroaniline (CAS 106-47-8) | 0.46 (2) | 16 (1) |
| Chlorobenzene (CAS 108-90-7) | 0.057 (2) | 5.7 (1) |
| Chlorobenzilate (CAS 510-15-6) | 0.10 (2) | NA |
| 2-Chloro-1,3-butadiene (CAS 126-99-8) | 0.057 (2) | NA |
| Chlorodibromomethane (CAS 124-48-1) | 0.057 (2) | 15 (1) |
| Chloroethane (CAS 75-00-3) | 0.27 (2) | 6.0 (1) |
| bis(2-Chloroethoxy) methane (CAS 111-91-1) | 0.036 (2) | 7.2 (1) |
| bis(2-Chloroethyl) ether (CAS 111-44-4) | 0.033 (2) | 7.2 (1) |
| Chloroform (CAS 67-66-3) | 0.046 (2) | 5.6 (1) |
| bis(2-Chloroisopropyl) ether (CAS 39638-32-9) | 0.055 (2) | 7.2 (1) |
| p-Chloro-m-cresol (CAS 59-50-7) | 0.018 (2) | 14 (1) |
| Chloromethane (Methyl chloride) (CAS 74-87-3) | 0.19 (2) | 33 (1) |
| 2-Chloronaphthalene (CAS 91-8-7) | 0.055 (2) | 5.6 (1) |
| 2-Chlorophenol (CAS 95-57-8) | 0.044 (2) | 5.7 (1) |
| 3-Chloropropylene (CAS 107-05-1) | 0.036 (2) | 28 (1) |
| Chrysene (CAS 218-01-9) | 0.059 (2) | 8.2 (1) |
| o-Cresol (CAS 95-48-7) | 0.11 (2) | 5.6 (1) |
| Cresol (m- and p-isomers) | 0.77 (2) | 3.2 (1) |
| Cyclohexanone (CAS 108-94-1) | 0.36 (2) | NA |
| 1,2-Dibromo-3-chloropropane (CAS 96-12-8) | 0.11 (2) | 15 (1) |
| 1,2-Dibromoethane (CAS 106-93-4) (Ethylene dibromide) | 0.028 (2) | 15 (1) |
| Dibromomethane (CAS 74-95-3) | 0.11 (2) | 15 (1) |
| 2,4-Dichlorophenoxyacetic acid (2,4-D) (CAS 94-75-7) | 0.72 (2) | 10 (1) |
| o,p'-DDD (CAS 53-19-0) | 0.023 (2) | 0.087 (1) |
| p,p'-DDD (CAS 72-54-8) | 0.023 (2) | 0.087 (1) |
| o,p'-DDE (CAS 3424-82-6) | 0.031 (2) | 0.087 (1) |
| p,p'-DDE (CAS 72-55-9) | 0.031 (2) | 0.087 (1) |
| o,p'-DDT (CAS 780-02-6) | 0.0039 (2) | 0.087 (1) |
| p,p'-DDT (CAS 50-29-3) | 0.0039 (2) | 0.087 (1) |
| Dibenzo(a,h)anthracene (CAS 53-70-3) | 0.055 (2) | 8.2 (1) |
| Dibenzo(a,e)pyrene (CAS 192-65-4) | 0.061 (2) | NA |
| m-Dichlorobenzene (CAS 541-73-1) | 0.036 (2) | 6.2 (1) |
| o-Dichlorobenzene (CAS 95-50-1) | 0.088 (2) | 6.2 (1) |
| p-Dichlorobenzene (CAS 106-46-7) | 0.090 (2) | 6.2 (1) |
| Dichlorodifluoromethane (CAS 75-71-8) | 0.23 (2) | 7.2 (1) |
| 1,1-Dichloroethane (CAS 75-34-3) | 0.059 (2) | 7.2 (1) |
| 1,2-Dichloroethane (CAS 107-06-2) | 0.21 (2) | 7.2 (1) |
| 1,1-Dichloroethylene (CAS 75-35-4) | 0.025 (2) | 33 (1) |
| trans-1,2-Dichloroethene | 0.054 (2) | 33 (1) |
| 2,4-Dichlorophenol (CAS 120-83-2) | 0.044 (2) | 14 (1) |
| 2,6-Dichlorophenol (CAS 87-65-0) | 0.044 (2) | 14 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| 1,2-Dichloropropane (CAS 78-87-5) | 0.85 (2) | 18 (1) |
| cis-1,3-Dichloropropene (CAS 10061-01-5) | 0.036 (2) | 18 (1) |
| trans-1,3-Dichloropropene (CAS 10061-02-6) | 0.036 (2) | 18 (1) |
| Dieldrin (CAS 60-57-1) | 0.017 (2) | 0.13 (1) |
| Diethyl phthalate (CAS 84-66-2) | 0.20 (2) | 28 (1) |
| 2,4-Dimethyl phenol (CAS 105-67-9) | 0.036 (2) | 14 (1) |
| Dimethyl phthalate (CAS 131-11-3) | 0.047 (2) | 28 (1) |
| Di-n-butyl phthalate (CAS 84-74-2) | 0.057 (2) | 28 (1) |
| 1,4-Dinitrobenzene (CAS 100-25-4) | 0.32 (2) | 2.3 (1) |
| 4,6-Dinitro-o-cresol (CAS 534-52-1) | 0.28 (2) | 160 (1) |
| 2,4-Dinitrophenol (CAS 51-28-5) | 0.12 (2) | 160 (1) |
| 2,4-Dinitrotoluene (CAS 121-14-2) | 0.32 (2) | 140 (1) |
| 2,6-Dinitrotoluene (CAS 606-20-2) | 0.55 (2) | 28 (1) |
| Di-n-octyl phthalate (CAS 117-84-0) | 0.017 (2) | 28 (1) |
| Di-n-propylnitrosoamine (CAS 621-64-7) | 0.40 (2) | 14 (1) |
| Diphenylamine (CAS 122-39-4) | 0.52 (2) | NA |
| 1,2-Diphenyl hydrazine (CAS 122-66-7) | 0.087 (2) | NA |
| Diphenylnitrosamine (CAS 621-64-7) | 0.40 (2) | NA |
| 1,4-Dioxane (CAS 123-91-1) | 0.12 (2) | 170 (1) |
| Disulfoton (CAS 298-04-4) | 0.017 (2) | 6.2 (1) |
| Endosulfan I (CAS 939-98-8) | 0.023 (2) | 0.066 (1) |
| Endosulfan II (CAS 33213-6-5) | 0.029 (2) | 0.13 (1) |
| Endosulfan sulfate (CAS 1031-07-8) | 0.029 (2) | 0.13 (1) |
| Endrin (CAS 72-20-8) | 0.0028 (2) | 0.13 (1) |
| Endrin aldehyde (CAS 7421-93-4) | 0.025 (2) | 0.13 (1) |
| Ethyl acetate (CAS 141-78-6) | 0.34 (2) | 33 (1) |
| Ethyl cyanide (CAS 107-12-0) | 0.24 (2) | 360 (1) |
| Ethyl benzene (CAS 100-41-4) | 0.057 (2) | 6.0 (1) |
| Ethyl ether (CAS 60-29-7) | 0.12 (2) | 160 (1) |
| bis(2-Ethylhexyl) phthalate (CAS 117-81-7) | 0.28 (2) | 28 (1) |
| Ethyl methacrylate (CAS 97-63-2) | 0.14 (2) | 160 (1) |
| Ethylene oxide (CAS 75-21-8) | 0.12 (2) | NA |
| Famphur (CAS 52-85-7) | 0.017 (2) | 15 (1) |
| Fluoranthene (CAS 206-44-0) | 0.068 (2) | 8.2 (1) |
| Fluorene (CAS 86-73-7) | 0.059 (2) | 4.0 (1) |
| Fluorotrichloromethane (CAS 75-69-4) | 0.020 (2) | 33 (1) |
| Heptachlor (CAS 76-44-8) | 0.0012 (2) | 0.066 (1) |
| Heptachlor epoxide (CAS 1024-57-3) | 0.016 (2) | 0.066 (1) |
| Hexachlorobenzene (CAS 118-74-1) | 0.055 (2) | 37 (1) |
| Hexachlorobutadiene (CAS 87-68-3) | 0.055 (2) | 28 (1) |
| Hexachlorocyclopentadiene (CAS 77-47-4) | 0.057 (2) | 3.6 (1) |
| Hexachlorodibenzo-furans | 0.000063 (2) | 0.001 (1) |
| Hexachlorodibenzo-p-dioxins | 0.000063 (2) | 0.001 (1) |
| Hexachloroethane (CAS 67-72-1) | 0.055 (2) | 28 (1) |
| Hexachloropropene (CAS 1888-71-7) | 0.035 (2) | 28 (1) |
| Indeno(1,2,3-c,d)pyrene (CAS 193-39-5) | 0.0055 (2) | 8.2 (1) |
| Iodomethane (CAS 74-88-4) | 0.019 (2) | 65 (1) |
| Isobutanol (CAS 78-83-1) | 5.6 (2) | 170 (1) |
| Isodrin (CAS 465-73-6) | 0.021 (2) | 0.066 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Isosafrole (CAS 120-58-1) | 0.081 (2) | 2.6 (1) |
| Kepone (CAS 143-50-8) | 0.0011 (2) | 0.13 (1) |
| Methacrylonitrile (CAS 126-98-7) | 0.24 (2) | 84 (1) |
| Methanol (CAS 67-56-1) | 5.6 (2) | NA |
| Methapyrilene (CAS 91-80-5) | 0.081 (2) | 1.5 (1) |
| Methoxychlor (CAS 72-43-5) | 0.25 (2) | 0.18 (1) |
| 3-Methylcholanthrene (CAS 56-49-5) | 0.0055 (2) | 15 (1) |
| 4,4-Methylene-bis-(2-chloroaniline) (CAS 101-14-4) (CAS 101-14-4) | 0.50 (2) | 35 (1) |
| Methylene chloride (CAS 75-09-2) | 0.089 (2) | 33 (1) |
| Methyl ethyl ketone (CAS 78-93-3) | 0.28 (2) | 36 (1) |
| Methyl isobutyl ketone (CAS 108-10-1) | 0.14 (2) | 33 (1) |
| Methyl methacrylate (CAS 80-62-6) | 0.14 (2) | 160 (1) |
| Methyl methansulfonate (CAS 66-27-3) | 0.018 (2) | NA |
| Methyl parathion (CAS 298-00-0) | 0.014 (2) | 4.6 (1) |
| Naphthalene (CAS 91-20-3) | 0.059 (2) | 3.1 (1) |
| 2-Naphtylamine (CAS 91-59-8) | 0.52 (2) | NA |
| p-Nitroaniline (CAS 100-01-6) | 0.028 (2) | 28 (1) |
| Nitrobenzene (CAS 96-95-3) | 0.068 (2) | 14 (1) |
| 5-Nitro-o-toluidine (CAS 99-55-8) | 0.32 (2) | 28 (1) |
| 4-Nitrophenol (CAS 100-02-7) | 0.12 (2) | 29 (1) |
| N-Nitrosodiethylamine (CAS 55-18-5) | 0.40 (2) | 28 (1) |
| N-Nitrosodimethylamine (CAS 62-75-9) | 0.40 (2) | NA |
| N-Nitroso-di-n-butylamine (CAS 924-16-3) | 0.40 (2) | 17 (1) |
| N-Nitrosomethylethylamine (CAS 10595-95-6) | 0.40 (2) | 2.3 (1) |
| N-Nitrosomorpholine (CAS 59-89-2) | 0.40 (2) | 2.3 (1) |
| N-Nitrosopiperidine (CAS 100-75-4) | 0.013 (2) | 35 (1) |
| N-Nitrosopyrrolidine (CAS 930-55-2) | 0.013 (2) | 35 (1) |
| Parathion (CAS 56-38-2) | 0.014 (2) | 4.6 (1) |
| Pentachlorobenzene (CAS 608-93-5) | 0.055 (2) | 37 (1) |
| Pentachlorodibenzo-furans | 0.000063 (2) | 0.001 (1) |
| Pentachlorodibenzo-p-dioxins | 0.000063 (2) | 0.001 (1) |
| Pentachloronitrobenzene (CAS 82-68-8) | 0.055 (2) | 4.8 (1) |
| Pentachlorophenol (CAS 87-86-5) | 0.089 (2) | 7.4 (1) |
| Phenacetin (CAS 62-44-2) | 0.081 (2) | 16 (1) |
| Phenanthrene (CAS 85-01-8) | 0.059 (2) | 3.1 (1) |
| Phenol (CAS 108-95-2) | 0.039 (2) | 6.2 (1) |
| Phorate (CAS 298-02-2) | 0.021 (2) | 4.6 (1) |
| Phthalicanhydridr (CAS 85-44-9) | 0.069 (2) | NA |
| Pronamide (CAS 23950-58-5) | 0.093 (2) | 1.5 (1) |
| Pyrene (CAS 129-00-0) | 0.067 (2) | 8.2 (1) |
| Pyridine (CAS 110-86-1) | 0.014 (2) | 16 (1) |
| Safrole (CAS 94-59-7) | 0.081 (2) | 22 (1) |
| Silvex (2,4,5-TP) (CAS 93-72-1) | 0.72 (2) | 7.9 (1) |
| 2,4,5-T (CAS 93-76-5) | 0.72 (2) | 7.9 (1) |
| 1,2,4,5,-Tetrachlorobenzene (CAS 95-94-3) | 0.055 (2) | 19 (1) |
| Tetrachlorodibenzo-furans | 0.000063 (2) | 0.001 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Tetrachlorodibenzo-p-dioxins | 0.000063 (2) | 0.001 (1) |
| 1,1,1,2-Tetrachloroethane (CAS 630-20-6) | 0.057 (2) | 42 (1) |
| 1,1,2,2-Tetrachloroethane (CAS 70-34-6) | 0.057 (2) | 42 (1) |
| Tetrachloroethene (CAS 127-18-4) | 0.056 (2) | 5.6 (1) |
| 2,3,4,6-Tetrachlorophenol (CAS 58-90-2) | 0.030 (2) | 37 (1) |
| Toluene (CAS 108-88-3) | 0.080 (2) | 28 (1) |
| Toxaphene (CAS 8001-35-1) | 0.0095 (2) | 1.3 (1) |
| 1,2,4-Trichlorobenzene (CAS 120-82-1) | 0.055 (2) | 19 (1) |
| 1,1,1-Trichloroethane (CAS 71-55-6) | 0.054 (2) | 5.6 (1) |
| 1,1,2-Trichloroethane (CAS 79-00-5) | 0.054 (2) | 5.6 (1) |
| Trichloroethylene (CAS 79-01-6) | 0.054 (2) | 5.6 (1) |
| 2,4,5-Trichlorophenol (CAS 95-95-4) | 0.18 (2) | 37 (1) |
| 2,4,6-Trichlorophenol (CAS 88-06-2) | 0.035 (2) | 37 (1) |
| 1,2,3-Trichloropropane (CAS 96-18-4) | 0.85 (2) | 28 (1) |
| 1,1,2-Trichloro-1,2,2-trifluoro-ethane (CAS 76-13-1) | 0.057 (2) | 28 (1) |
| Tris(2,3-dibromopropyl) (CAS 126-72-7) | 0.11 (2) | NA |
| Vinyl chloride (CAS 75-01-4) | 0.27 (2) | 33 (1) |
| Xylene(s) | 0.32 (2) | 28 (1) |
| Cyanides (total) (CAS 57-12-5) | 1.2 (2) | 1.8 (1) |
| Fluoride (CAS 16964-48-8) | 35 (2) | NA |
| Sulfide (CAS 8496-25-8) | 14 (2) | NA |
| Antimony (CAS 7440-36-0) | 1.9 (2) | NA |
| Arsenic (CAS 7440-38-2) | 1.4 (2) | NA |
| Barium (CAS 7440-39-3) | 1.2 (2) | NA |
| Beryllium (CAS 7440-41-7) | 0.82 (2) | NA |
| Cadmium (CAS 7440-43-9) | 0.20 (2) | NA |
| Chromium (total) (CAS 7440-47-32) | 0.37 | NA |
| Copper (CAS 7440-50-8) | 1.3 (2) | NA |
| Lead (CAS 7439-92-1) | 0.28 (2) | NA |
| Mercury (CAS 7439-97-6) | 0.15 (2) | NA |
| Nickel (CAS 7440-02-0) | 0.55 (2) | NA |
| Selenium (CAS 7782-49-2) | 0.82 (2) | NA |
| Silver (CAS 7440-22-4) | 0.29 (2) | NA |
| Thallium (CAS 7440-28-0) | 1.4 (2) | NA |
| Vanadium (CAS 7440-62-2) | 0.042 (2) | NA |
| Zinc (CAS 7440-66-6) | 1.0 (2) | NA |
| K001* | | |
| Naphthalene (CAS 91-20-3) | 0.031 (1) | 1.5 (1) |
| Pentachlorophenol (CAS 87-86-5) | 0.18 (1) | 7.4 (1) |
| Penanthrene | | |
| Pyrene (CAS 85-01-8) | 0.031 (1) | 1.5 (1) |
| Toluene (CAS 129-00-0) | 0.028 (1) | 1.5 (1) |
| Xylenes (total) (CAS 108-88-3) | 0.028 (1) | 28 (1) |
| Lead (CAS 7439-92-1) | 0.032 (1) 0.037 | 33 NA |
| K002*, K003*, and K004* | | |
| Chromium (total) (CAS 7440-47-32) | 0.9 (2) | NA |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|--|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Lead (CAS 7439-92-1) | 3.4 (2) | NA |
| K005* | | |
| Chromium (total) (CAS 7440-47-32) | 0.9 (2) | NA |
| Lead (CAS 7439-92-1) | 3.4 (2) | NA |
| Cyanides (total) (CAS 57-12-5) | 0.74 (2) | Reserved |
| K006* | | |
| Chromium (total) (CAS 7440-47-32) | 0.9 (2) | NA |
| Lead (CAS 7439-92-1) | 3.4 (2) | NA |
| K007* | | |
| Chromium (total) (CAS 7440-47-32) | 0.9 (2) | NA |
| Lead (CAS 7439-92-1) | 3.4 (2) | NA |
| Cyanides (total) (CAS 57-12-5) | 0.74 (2) | |
| K008* | | |
| Chromium (total) (CAS 7440-47-32) | 0.9 (2) | NA |
| Lead (CAS 7439-92-1) | 3.4 (2) | NA |
| K009 | | |
| Chloroform (CAS 67-66-3) | 0.1 | 6.0 (1) |
| K010 | | |
| Chloroform (CAS 67-66-3) | 0.1 | 6.0 (1) |
| K011, K013, and K014 | | |
| Acetonitrile (CAS 75-05-8) | 38 | 1.8 (1) |
| Acrylonitrile (CAS 107-13-1) | 0.06 | 1.4 (1) |
| Acrylamide (CAS 79-06-1) | 19 | 23 (1) |
| Benzene (CAS 71-34-2) | 0.02 | 0.03 (1) |
| Cyanide (total) (CAS 57-12-5) | 21 | 57 |
| K015* | | |
| Anthracene (CAS 120-12-7) | 1.0 | 3.4 (1) |
| Benzal chloride (CAS 98-87-3) | 0.28 | 6.2 (1) |
| Sum of Benzo(b) fluoranthene (CAS 205-99-2) and Benzo(k)fluoranthene (CAS 207-08-9) | 0.029 | 3.4 (1) |
| Phenanthrene (CAS 85-01-8) | 0.27 | 3.4 (1) |
| Toluene (CAS 108-88-3) | 0.15 | 6.0 (1) |
| Chromium (total) (CAS 7440-47-32) | 0.32 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| K016 | | |
| Hexachlorobenzene (CAS 118-74-1) | 0.033 (1) | 28 (1) |
| Hexachlorobutadiene (CAS 87-68-3) | 0.007 (1) | 5.6 (1) |
| Hexachlorocyclopentadiene (CAS 77-47-4) | 0.007 (1) | 5.6 (1) |
| Hexachloroethane (CAS 67-72-1) | 0.033 (1) | 28 (1) |
| Tetrachloroethene (CAS 127-18-4) | 0.007 (1) | 6.0 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| K017 | | |
| 1,2-Dichloropropane (CAS 78-87-5) | 0.85 (1,2) | 18 (1) |
| 1,2,3-Trichloropropane (CAS 96-16-4) | 0.85 (1,2) | 28 (1) |
| Bis(2-chloroethyl)ether (CAS 111-44-4) | 0.033 (1,2) | 7.2 (1) |
| K018 | | |
| Chloroethane (CAS 75-00-3) | 0.007 (1) | 6.0 (1) |
| Chloromethane (CAS 74-87-3) | 0.007 (1) | NA |
| 1,1-Dichloroethane (CAS 75-34-3) | 0.007 (1) | 6.0 (1) |
| 1,2-Dichloroethane (CAS 107-06-2) | 0.007 (1) | 6.0 (1) |
| Hexachlorobenzene (CAS 118-74-1) | 0.033 (1) | 28 (1) |
| Hexachlorobutadiene (CAS 87-68-3) | 0.007 (1) | 5.6 (1) |
| Hexachloroethane (CAS 67-72-1) | NA | 28 (1) |
| Pentachloroethane (CAS 76-01-7) | 0.007 (1) | 5.6 (1) |
| 1,1,1-Trichloroethane (CAS 71-55-6) | 0.007 (1) | 6.0 (1) |
| K019 | | |
| Bis(2-chloroethyl)ether (CAS 111-44-4) | 0.007 (1) | 5.6 (1) |
| Chlorobenzene (CAS 108-90-7) | 0.006 (1) | 6.0 (1) |
| Chloroform (CAS 67-66-3) | 0.007 (1) | 6.0 (1) |
| p-Dichlorobenzene (CAS 106-46-7) | 0.008 (1) | NA |
| 1,2-Dichloroethane (CAS 107-06-2) | 0.007 (1) | 6.0 (1) |
| Fluorene (CAS 86-73-7) | 0.007 (1) | NA |
| Hexachloroethane (CAS 67-72-1) | 0.033 (1) | 28 (1) |
| Naphthalene (CAS 91-20-3) | 0.007 (1) | 5.6 (1) |
| Phenanthrene (CAS 85-01-8) | 0.007 (1) | 5.6 (1) |
| 1,2,4,5-Tetrachlorobenzene (CAS 95-94-3) | 0.017 (1) | NA |
| Tetrachloroethene (CAS 127-18-4) | 0.007 (1) | 6.0 (1) |
| 1,2,4-Trichlorobenzene (CAS 120-82-1) | 0.023 (1) | 19 (1) |
| 1,1,1-Trichloroethane (CAS 71-55-6) | 0.007 (1) | 6.0 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| K020 | | |
| 1,2-Dichloroethane (CAS 107-06-2) | 0.007 (1) | 6.0 (1) |
| 1,1,2,2-Tetrachloroethane (CAS 79-34-6) | 0.007 (1) | 5.6 (1) |
| Tetrachloroethene (CAS 127-18-4) | 0.007 (1) | 6.0 (1) |
| K021* | | |
| Chloroform (CAS 67-66-3) | 0.046 (2) | 6.2 (1) |
| Carbon tetrachloride (CAS 56-23-5) | 0.057 (2) | 6.2 (1) |
| Antimony (CAS 7440-36-0) | 0.60 (2) | NA (1) |
| K022* | | |
| Toluene (CAS 108-88-3) | 0.080 (2) | 0.034 (1) |
| Acetophenone (CAS 96-86-2) | 0.010 | 19 (1) |
| Diphenylamine (CAS 22-39-4) | 0.52 (2) | NA |
| Diphenylnitrosamine (CAS 86-30-60) | 0.40 (2) | NA |
| Sum of Diphenylamine and Diphenylnitrosamine | NA | 13 (1) |
| Phenol (CAS 108-95-2) | 0.039 | 12 (1) |
| Chromium (total) (CAS 7440-47-32) | 0.35 | NA |
| Nickel (CAS 7440-02-0) | 0.47 | NA |
| K023 and K024 | | |
| Phthalic anhydride (measured as Phthalic acid) (CAS 85-44-9) | 0.54 (1) | 28 (1) |
| K028* | | |
| 1,1-Dichloroethane (CAS 75-34-3) | 0.007 (1) | 6.0 (1) |
| trans-1,2-Dichloroethane | 0.033 (1) | 6.0 (1) |
| Hexachlorobutadiene (CAS 87-68-3) | 0.007 (1) | 5.6 (1) |
| Hexachloroethane (CAS 67-72-1) | 0.033 (1) | 28 (1) |
| Pentachloroethane (CAS 76-01-7) | 0.033 (1) | 5.6 (1) |
| 1,1,1,2-Tetrachloroethane (CAS 630-20-6) | 0.007 (1) | 5.6 (1) |
| 1,1,2,2-Tetrachloroethane (CAS 79-34-6) | 0.007 (1) | 5.6 (1) |
| 1,1,1-Trichloroethane (CAS 71-55-6) | 0.007 (1) | 6.0 (1) |
| 1,1,2-Trichloroethane (CAS 79-00-5) | 0.007 (1) | 6.0 (1) |
| Tetrachloroethylene (CAS 127-18-4) | 0.007 (1) | 6.0 (1) |
| Cadmium (CAS 7440-43-9) | 6.4 | NA |
| Chromium (total) (CAS 7440-47-32) | 0.35 | NA |
| Lead (CAS 7439-92-1) | 0.037 | NA |
| Nickel (CAS 7440-02-0) | 0.47 | NA |
| K029 | | |
| Chloroform (CAS 67-66-3) | 0.046 | 6.0 (1) |
| 1,2-Dichloroethane (CAS 107-06-2) | 0.21 | 6.0 (1) |
| 1,1-Dichloroethylene (CAS 75-35-4) | 0.025 | 6.0 (1) |
| 1,1,1-Trichloroethane (CAS 71-55-6) | 0.054 | 6.0 (1) |
| Vinyl chloride (CAS 75-01-4) | 0.27 | 6.0 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| K030 | | |
| o-Dichlorobenzene (CAS 95-50-1) | 0.008 (1) | NA |
| p-Dichlorobenzene (CAS 106-46-7) | 0.008 (1) | NA |
| Hexachlorobutadiene (CAS 87-68-3) | 0.007 (1) | 5.6 (1) |
| Hexachloroethane (CAS 67-72-1) | 0.033 (1) | 28 (1) |
| Hexachloropropene (CAS 1888-71-7) | NA | 19 (1) |
| Pentachlorobenzene (CAS 608-93-5) | NA | 28 (1) |
| Pentachloroethane (CAS 76-01-7) | 0.007 (1) | 5.6 (1) |
| 1,2,4,5-Tetrachlorobenzene (CAS 76-01-7) | 0.017 | 14 (1) |
| Tetrachloroethane (CAS 127-18-4) | 0.007 (1) | 6.0 (1) |
| 1,2,4-Trichlorobenzene (CAS 120-82-1) | 0.023 (1) | 19 (1) |
| K031* | | |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| K032 | | |
| Hexachloropentadiene (CAS 77-47-4) | 0.057 (2) | 2.4 (1) |
| Chlordane (CAS 57-74-9) | 0.0033 (2) | 0.26 (1) |
| Heptachlor (CAS 76-44-8) | 0.012 (2) | 0.066 (1) |
| Heptachlor epoxide (CAS 1024-57-3) | 0.016 (2) | 0.066 (1) |
| K033 and K034 | | |
| Hexachlorocyclopentadiene (CAS 77-47-4) | 0.057 (2) | 2.4 (1) |
| K035 | | |
| Acenaphthene (CAS 83-32-9) | NA | 3.4 (1) |
| Anthracene (CAS 120-12-7) | NA | 3.4 (1) |
| Benz(a)anthracene (CAS 56-55-3) | 0.059 (2) | 3.4 (1) |
| Benzo(a)pyrene (CAS 5-32-8) | NA | 3.4 (1) |
| Chrysene (CAS 218-01-9) | 0.059 (2) | 3.4 (1) |
| Dibenz(a,h)anthracene (CAS 53-70-3) | NA | 3.4 (1) |
| Fluoranthene (CAS 206-44-0) | 0.068 (2) | 3.4 (1) |
| Fluorene (CAS 86-73-7) | NA | 3.4 (1) |
| Indeno(1,2,3-cd)pyrene (CAS 193-39-5) | NA | 3.4 (1) |
| Cresols (m- and p-isomers) | 0.77 (2) | NA |
| Naphthalene (CAS 91-20-3) | 0.059 (2) | 3.4 (1) |
| o-cresol (CAS 95-48-7) | 0.11 (2) | NA |
| Phenanthrene (CAS 85-01-8) | 0.059 (2) | 3.4 (1) |
| Phenol (CAS 108-95-2) | 0.0 | N |
| Pyrene (CAS 129-00-0) | 0.067 (2) | 8-2 (1) |
| K036 | | |
| Disulfoton (CAS 298-04-4) | 0.025 (2) | 0.1 (1) |
| K037 | | |
| Disulfoton (CAS 298-04-4) | 0.025 (2) | 0.1 (1) |
| Toluene (CAS 108-88-3) | 0.080 (2) | 28 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| K038 | | |
| Phorate (CAS 298-02-2) | 0.025 (2) | 0.1 (1) |
| K040 | | |
| Phorate (CAS 298-02-2) | 0.025 (2) | 0.1 (1) |
| K041 | | |
| Toxaphene (CAS 8001-35-1) | 0.0095 (2) | 2.6 (1) |
| K042 | | |
| 1,2,4,5-Tetrachlorobenzene (CAS 95-94-3) | 0.055 (2) | 4.4 (1) |
| o-Dichlorobenzene (CAS 95-50-1) | 0.088 (2) | 4.4 (1) |
| p-Dichlorobenzene (CAS 106-46-7) | 0.090 (2) | 4.4 (1) |
| Pentachlorobenzene (CAS 608-93-5) | 0.055 (2) | 4.4 (1) |
| 1,2,4-Trichlorobenzene (CAS 120-82-1) | 0.055 (2) | 4.4 (1) |
| K043 | | |
| 2,4-Dichlorophenol (CAS 120-83-2) | 0.049 (1) | 0.38 (1) |
| 2,6-Dichlorophenol (CAS 87-65-0) | 0.013 (1) | 0.34 (1) |
| 2,4,5-Trichlorophenol (CAS 95-95-4) | 0.016 (1) | 8.2 (1) |
| 2,4,6-Trichlorophenol (CAS 88-06-2) | 0.039 (1) | 7.6 (1) |
| Tetrachlorophenols (total) | 0.018 (1) | 0.68 (1) |
| Pentachlorophenol (CAS 87-86-5) | 0.22 (1) | 1.9 (1) |
| Tetrachloroethene (CAS 79-01-6) | 0.006 (1) | 1.7 (1) |
| Hexachlorodibenzo-p-dioxins | 0.001 (1) | 0.001 (1) |
| Hexachlorodibenzo-furans | 0.001 (1) | 0.001 (1) |
| Pentachlorodibenzo-p-dioxins | 0.001 (1) | 0.001 (1) |
| Pentachlorodibenzo-furans | 0.001 (1) | 0.001 (1) |
| Tetrachlorodibenzo-p-dioxins | 0.001 (1) | 0.001 (1) |
| Tetrachlorodibenzo-furans | 0.001 (1) | 0.001 (1) |
| K046* | | |
| Lead (CAS 7439-92-1) | 0.037 | NA |
| K048* | | |
| Benzene (CAS 71-43-2) | 0.011 (1) | 14 (1) |
| Benzo(a)pyrene (CAS 50-32-8) | 0.047 (1) | 12 (1) |
| Bis(2-ethylhexy)phthalate (CAS 117-81-7) | 0.043 (1) | 7.3 (1) |
| Chrysene (CAS 218-01-9) | 0.043 (1) | 15 (1) |
| Di-n-butyl phthalate (CAS 84-74-2) | 0.06 (1) | 3.6 (1) |
| Ethylbenzene | | |
| Fluorene (CAS 100-41-4) | 0.011 (1) | 14 (1) |
| Naphthalene (CAS 86-73-7) | 0.005 (1) | NA |
| Phenanthrene (CAS 91-20-3) | 0.033 (1) | 42 (1) |
| Phenol (CAS 85-01-8) | 0.039 (1) | 34 (1) |
| Pyrene (CAS 108-95-2) | 0.047 (1) | 3.6 (1) |
| Toluene (CAS 129-00-0) | 0.045 (1) | 36 (1) |
| Xylene(s) (108-88-3) | 0.011 (1) | 14 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Cyanides(total) | 0.011 (1) | 22 (1) |
| Chromium(total) (CAS 57-12-5) | 0.28 (1) | 1.8 (1) |
| Lead (CAS 7440-47-32) | 0.2 | NA |
| (CAS 7439-92-1) | 0.037 | NA |
| K049* | | |
| Anthracene (CAS 120-12-7) | 0.039 (1) | 28 (1) |
| Benzene (CAS 71-43-2) | 0.011 (1) | 14 (1) |
| Benzo(a)pyrene (CAS 50-32-8) | 0.047 (1) | 12 (1) |
| Bis(2-ethylhexyl)phthalate (CAS 117-81-7) | 0.043 (1) | 7.3 (1) |
| Carbon disulfide (CAS 75-15-0) | 0.011 (1) | NA |
| Chrysene (CAS 2218-01-9) | 0.043 (1) | 15 (1) |
| 2,4-Dimethylphenol (CAS 105-67-9) | 0.033 (1) | NA |
| Ethylbenzene | | |
| Naphthalene (CAS 100-41-4) | 0.011 (1) | 14 (1) |
| Phenanthrene (CAS 91-20-3) | 0.033 (1) | 42 (1) |
| Phenol (CAS 85-01-8) | 0.039 (1) | 34 (1) |
| Pyrene (CAS 108-95-2) | 0.047 (1) | 3.6 (1) |
| Toluene (CAS 129-00-0) | 0.045 (1) | 36 (1) |
| Xylene(s) (CAS 108-88-3) | 0.011 (1) | 14 (1) |
| Cyanides(total) | 0.011 (1) | 22 (1) |
| Chromium(total) (CAS 57-12-5) | 0.028 (1) | 1.8 (1) |
| Lead (CAS 7440-47-32) | 0.2 | NA |
| (CAS 7439-92-1) | 0.037 (1) | NA |
| K050* | | |
| Benzo(a)pyrene (CAS 50-32-8) | 0.047 (1) | 12 |
| Phenol (CAS 108-95-2) | 0.047 (1) | 3.6 (1) |
| Cyanides(total) (CAS 57-12-5) | 0.028 (1) | 1.8 (1) |
| Chromium(total) (CAS 7440-47-32) | 0.2 | NA |
| Lead (CAS 7439-92-1) | 0.037 | NA |
| K051* | | |
| Acenaphthene (CAS 208-96-8) | 0.05 (1) | NA |
| Anthracene (CAS 120-12-7) | 0.039 (1) | 28 (1) |
| Benzene (CAS 71-43-2) | 0.011 (1) | 14 (1) |
| Benzo(a)anthracene (CAS 50-32-8) | 0.043 (1) | 20 (1) |
| Benzo(a)pyrene | | |
| Bis(2-ethylhexyl)phthalate (117-81-7) | 0.047 (1) | 12 (1) |
| (CAS 75-15-0) | 0.043 (1) | 7.3 (1) |
| Chrysene | | |
| Di-n-butyl phthalate (CAS 2218-01-09) | | |
| Ethylbenzene (CAS 105-67-9) | 0.043 (1) | 15 (1) |
| Fluorence | 0.06 (1) | 3.6 (1) |
| Naphthalene (CAS 100-41-4) | | |
| Phenanthrene (CAS 86-73-7) | 0.011 (1) | 14 (1) |
| Phenol (CAS 91-20-3) | 0.05 (1) | NA |
| Pyrene (CAS 85-01-8) | 0.033 (1) | 42 (1) |
| Toluene (CAS 108-95-2) | 0.039 (1) | 34 (1) |
| Xylene(s) (CAS 129-00-0) | 0.047 (1) | 3.6 (1) |
| Cyanides(total) (CAS 108-88-3) | 0.045 (1) | 36 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Chromium(total) | 0.011 (1) | 14 (1) |
| Lead (CAS 57-12-5) | 0.11 (1) | 22 (1) |
| (CAS 7440-47-32) | 0.028 (1) | 1.8 (1) |
| (CAS 7439-92-1) | 0.2 | NA |
| | 0.037 | NA |
| K052* | | |
| Benzene (CAS 71-43-2) | 0.011 (1) | 14 (1) |
| Benzo(a)pyrene (CAS 50-32-8) | 0.047 (1) | 12 (1) |
| o-Cresol (CAS 95-48-7) | 0.011 (1) | 6.2 (1) |
| p-Cresol (CAS 106-44-5) | 0.011 (1) | 6.2 (1) |
| 2,4-Dimethylphenol (CAS 105-67-9) | 0.033 (1) | NA |
| Ethylbenzene | | |
| Naphthalene (CAS 100-41-4) | 0.011 (1) | 14 (1) |
| Phenanthrene (CAS 91-20-3) | 0.033 (1) | 42 (1) |
| Phenol (CAS 85-01-8) | 0.039 (1) | 34 (1) |
| Toluene (CAS 108-95-2) | 0.047 (1) | 3.6 (1) |
| Xylenes (CAS 108-88-3) | 0.011 (1) | 14 (1) |
| Cyanides (total) | 0.011 (1) | 22 (1) |
| Chromium (total) (CAS 57-12-5) | 0.28 (1) | 1.8 (1) |
| Lead (CAS 7440-47-32) | 0.2 | NA |
| (CAS 7439-92-1) | 0.037 | NA |
| K060 | | |
| Benzene (CAS 71-43-2) | 0.17 (1,2) | 0.071 (1) |
| Benzo(a)pyrene (CAS 50-32-8) | 0.035 (1,2) | 3.6 (1) |
| Naphthalene (CAS 91-20-3) | 0.028 (1,2) | 3.4 (1) |
| Phenol (CAS 108-95-2) | 0.042 (1,2) | 3.4 (1) |
| Cyanides(total) (CAS 57-12-5) | 1.9 | 1.2 |
| K061* | | |
| Cadmium (CAS 7440-43-9) | 1.61 | NA |
| Chromium(total) (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.51 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| K062* | | |
| Chromium(total) (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.04 | NA |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| K069*** | | |
| Cadmium (CAS 7440-43-9) | 1.6 | NA |
| Lead (CAS 7439-92-1) | 0.51 | NA |
| K071* | | |
| Mercury (CAS 7439-97-6) | 0.030 | NA |
| K073 | | |
| Carbon tetrachloride (CAS 56-23-5) | 0.057 (2) | 6.2 (1) |
| Chloroform (CAS 67-66-3) | 0.046 (2) | 6.2 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Hexachloroethane (CAS 67-72-1) | 0.055 (2) | 30 (1) |
| Tetrachloroethene (CAS 127-18-4) | 0.056 (2) | 6.2 (1) |
| 1,1,1-Trichloroethane (CAS 71-55-6) | 0.054 (2) | 6.2 (1) |
| K083* | | |
| Benzene (CAS 71-34-2) | 0.14 (2) | 6.6 (1) |
| Aniline (CAS 62-53-3) | 0.81 | 14 (1) |
| Diphenylamine (CAS 22-39-4) | 0.52 (2) | NA |
| Diphenylnitrosamine (CAS 86-30-6) | 0.40 (2) | NA |
| Sum of diphenylamine and Diphenyl- nitrosamine | NA | 14 (1) |
| Nitrobenzene (CAS 98-95-3) | 0.068 (2) | 14 (1) |
| Phenol (CAS 108-95-2) | 0.039 (2) | 5.6 (1) |
| Cyclohexanone (CAS 108-94-1) | 0.36 | NA |
| Nickel (CAS 7440-02-0) | 0.47 | NA |
| K084 | | |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| K085 | | |
| Benzene (CAS 71-43-2) | 0.14 (2) | 4.4 (1) |
| Chlorobenzene (CAS 108-90-7) | 0.057 (2) | 4.4 (1) |
| o-Dichlorobenzene (CAS 95-50-1) | 0.088 (2) | 4.4 (1) |
| m-Dichlorobenzene (CAS 541-73-1) | 0.036 (2) | 4.4 (1) |
| p-Dichlorobenzene (CAS 106-46-7) | 0.090 (2) | 4.4 (1) |
| 1,2,4-Trichlorobenzene (CAS 120-82-1) | 0.055 (2) | 4.4 (1) |
| 1,2,4,5-Tetrachlorobenzene (CAS 95-94-3) | 0.055 (2) | 4.4 (1) |
| Pentachlorobenzene (CAS 608-93-5) | 0.055 (2) | 4.4 (1) |
| Hexachlorobenzene (CAS 118-74-1) | 0.055 (2) | 4.4 (1) |
| Aroclor 1016 (CAS 12674-11-2) | 0.013 (2) | 0.92 (1) |
| Aroclor 1221 (CAS 11104-28-2) | 0.014 (2) | 0.92 (1) |
| Aroclor 1232 (CAS 11141-16-5) | 0.013 (2) | 0.92 (1) |
| Aroclor 1242 (CAS 53469-21-9) | 0.017 (2) | 0.92 (1) |
| Aroclor 1248 (CAS 12672-29-6) | 0.013 (2) | 0.92 (1) |
| Aroclor 1254 (CAS 11097-69-1) | 0.014 (2) | 1.8 (1) |
| Aroclor 1260 (CAS 11096-82-5) | 0.014 (2) | 1.8 (1) |
| K086* | | |
| Acetone (CAS 67-64-1) | 0.28 | 160 (1) |
| Acetophenone (CAS 96-86-2) | 0.010 | 9.7 (1) |
| Bis(2-ethylhexyl)phthalate (CAS 117-81-7) | 0.28 (2) | 28 (1) |
| n-Butyl alcohol (CAS 71-36-3) | 5.6 | 2.6 (1) |
| Butylbenzylphthalate (CAS 85-68-7) | 0.017 (2) | 7.9 (1) |
| Cyclohexanone (CAS 108-94-1) | 0.36 | NA |
| 1,2-Dichlorobenzene (CAS 95-50-1) | 0.088 | 6.2 (1) |
| Diethyl phthalate (CAS 84-66-2) | 0.20 (2) | 28 (1) |
| Dimethylphthalate (CAS 131-11-3) | 0.047 (2) | 28 (1) |
| Di-n-butylphthalate (CAS 84-74-2) | 0.057 (2) | 28 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Di-n-octylphthalate (CAS 117-84-0) | 0.017 (20) | 28 (1) |
| Ethyl acetate (CAS 141-78-6) | 0.34 (2) | 33 (1) |
| Ethylbenzene (CAS 100-41-4) | 0.057 (2) | 6.0 |
| Methanol (CAS 67-56-1) | 5.6 (2) | NA |
| Methyl isobutyl ketone (CAS 108-10-1) | 0.14 | 33 (1) |
| Methyl ethyl ketone (CAS 78-93-3) | 0.28 | 36 (1) |
| Methylene chloride (CAS 75-09-2) | 0.089 (2) | 33 (1) |
| Naphthalene (CAS 91-20-3) | 0.059 (2) | 3.1 (1) |
| Nitrobenzene (CAS 98-95-3) | 0.068 (2) | 14 (1) |
| Toluene (CAS 108-88-3) | 0.080 (2) | 28 (1) |
| 1,1,1-Trichloroethane (CAS 71-55-6) | 0.054 (2) | 5.6 (1) |
| Trichloroethylene (CAS 79-01-6) | 0.054 (2) | 5.6 (1) |
| Xylenes (Total) | 0.32 (2) | 28 (1) |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 1.5 |
| Chromium (Total) (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.037 | NA |
| K087* | | |
| Acenaphthalene (CAS 208-96-8) | 0.028 (1) | 3.4 (1) |
| Benzene (CAS 71-43-2) | 0.014 (1) | 0.071 (1) |
| Chrysene (CAS 218-01-9) | 0.028 (1) | 3.4 (1) |
| Fluoranthene (CAS 206-44-0) | 0.028 (1) | 3.4 (1) |
| Indeno(1,2,3-cd)pyrene (CAS 193-39-5) | 0.028 (1) | 3.4 (1) |
| Naphthalene | | |
| Phenanthrene (CAS 91-20-3) | 0.028 (10) | 3.4 (1) |
| Toluene (CAS 85-01-8) | 0.028 (1) | 3.4 (1) |
| Xylenes (CAS 108-88-3) | 0.008 (1) | 0.65 (1) |
| Lead | 0.014 (1) | 0.07 (1) |
| (CAS 7439-92-1) | 0.037 | NA |
| K093 and K094 | | |
| Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid) | 0.54 (1) | 28 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| K095 | | |
| 1,1,1,2-Tetrachloroethane (CAS 630-20-6) | 0.057 | 5.6 (1) |
| 1,1,2,2-Tetrachloroethane (CAS 79-34-6) | 0.057 | 5.6 (1) |
| Tetrachloroethene (CAS 127-18-4) | 0.056 | 6.0 (1) |
| 1,1,2-Trichloroethane (CAS 79-00-5) | 0.054 | 6.0 (1) |
| Trichloroethylene (CAS 79-01-6) | 0.054 | 5.6 (1) |
| Hexachloroethane (CAS 67-72-1) | 0.055 | 28 (1) |
| Pentachloroethane (CAS 76-01-7) | 0.055 | 5.6 (1) |
| K096 | | |
| 1,1,1,2-Tetrachloroethane (CAS 630-20-6) | 0.057 | 5.6 (1) |
| 1,1,2,2-Tetrachloroethane (CAS 79-34-6) | 0.057 | 5.6 (1) |
| Tetrachloroethene (CAS 127-18-4) | 0.056 | 6.0 (1) |
| 1,1,2-Trichloroethane (CAS 79-00-5) | 0.054 | 6.0 (1) |
| Trichloroethene (CAS 79-01-6) | 0.054 | 5.6 (1) |
| Trichloroethylene (CAS 79-01-6) | 0.054 | 5.6 (1) |
| 1,3-Dichlorobenzene (CAS 541-73-1) | 0.036 | 5.6 (1) |
| Pentachloroethane (CAS 76-01-7) | 0.055 | 5.6 (1) |
| 1,2,4-Trichlorobenzene (CAS 120-82-1) | 0.055 | 19 (1) |
| K097 | | |
| Hexachlorocyclopentadiene (CAS 77-47-4) | 0.057 (2) | 2.4 (1) |
| Chlordane (CAS 57-74-9) | 0.0033 (2) | 0.26 (1) |
| Heptachlor (CAS 76-44-8) | 0.0012 (2) | 0.066 (1) |
| Heptachlor epoxide (CAS 1024-57-3) | 0.016 (2) | 0.066 (1) |
| K098 | | |
| Toxaphene (CAS 8001-35-1) | 0.0095 (2) | 2.6 (1) |
| K099 | | |
| 2,4-Dichlorophenoxyacetic acid (CAS 94-75-7) | 1.0 (1) | 1.0 (1) |
| Hexachlorodibenzo-p-dioxins | 0.001 (1) | 0.001 (1) |
| Hexachlorodibenzofurans | 0.001 (1) | 0.001 (1) |
| Pentachlorodibenzo-p-dioxins | 0.001 (1) | 0.001 (1) |
| Pentachlorodibenzofurans | 0.001 (1) | 0.001 (1) |
| Tetrachlorodibenzo-p-dioxins | 0.001 (1) | 0.001 (1) |
| Terachlorodibenzofurans | 0.001 (1) | 0.001 (1) |
| K100* | | |
| Cadmium (CAS 7440-43-9) | 1.6 | NA |
| Chromium (CAS 7440-47-32) | 0.32 | NA |
| Lead (CAS 7439-92-1) | 0.51 | NA |
| K101 | | |
| o-Nitroaniline | 0.27 (1) | 14 (1) |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| Cadmium (CAS 7440-43-9) | 0.24 | NA |
| Lead (CAS 7439-92-1) | 0.17 | NA |
| Mercury (CAS 7439-97-6) | 0.082 | NA |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| K102* | | |
| o-Nitrophenol | 0.028 (1) | 13 (1) |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| Cadmium (CAS 7440-43-9) | 0.24 | NA |
| Lead (CAS 7439-92-1) | 0.17 | NA |
| Mercury (CAS 7439-97-6) | 0.082 | NA |
| K103 | | |
| Aniline (CAS 62-53-3) | 4.5 | 5.6 (1) |
| Benzene (CAS 71-34-2) | 0.15 | 6.0 (1) |
| 2,4-Dinitrophenol (CAS 51-28-5) | 0.61 | 5.6 (1) |
| Nitrobenzene (CAS 98-95-3) | 0.073 | 5.6 (1) |
| Phenol (CAS 108-95-2) | 1.4 | 5.6 (1) |
| K104 | | |
| Aniline (CAS 62-53-3) | 4.5 | 5.6 (1) |
| Benzene (CAS 71-43-2) | 0.15 | 6.0 (1) |
| 2,4-Dinitrophenol (CAS 51-28-5) | 0.61 | 5.6 (1) |
| Nitrobenzene (CAS 98-95-3) | 0.073 | 5.6 (1) |
| Phenol (CAS 108-95-2) | 1.4 | 5.6 (1) |
| Cyanides (Total) (CAS 57-12-5) | 2.7 | 1.8 (1) |
| K105 | | |
| Benzene (CAS 71-43-2) | 0.14 | 4.4 (1) |
| Chlorobenzene (CAS 108-90-7) | 0.057 | 4.4 (1) |
| o-Dichlorobenzene (CAS 95-50-1) | 0.088 | 4.4 (1) |
| p-Dichlorobenzene (CAS 106-46-7) | 0.090 | 4.4 (1) |
| 2,4,5-Trichlorophenol (CAS 95-95-4) | 0.18 | 4.4 (1) |
| 2,4,6-Trichlorophenol (CAS 88-06-2) | 0.035 | 4.4 (1) |
| 2-Chlorophenol (CAS 95-57-8) | 0.044 | 4.4 (1) |
| Phenol (CAS 108-95-2) | 0.039 | 4.4 (1) |
| K106*** | | |
| Mercury (CAS 7439-97-6) | 0.030 | NA |
| K115* | | |
| Nickel (CAS 7440-02-0) | 0.47 | NA |
| P004 (Aldrin) | | |
| Aldrin (CAS 309-00-2) | 0.21 (2) | 0.066 (1) |
| P010* (Arsenic acid) | | |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| P011* (Arsenic pentoxide) | | |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| P012* (Arsenic trioxide) | | |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|--|-------------------------------------|---|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| P013* (Barium cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.1 | 9.1 |
| P020 (Dinoseb) | | |
| 2-sec-Butyl-4,6-dinitrophenol (CAS 88-85-7) | 0.066 | 2.5 (1) |
| P021 (Calcium cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.1 | 9.1 |
| P022** (Carbon disulfide) | | |
| Carbon disulfide (CAS 75-15-0) | 0.014 | NA |
| P024 (p-Chloroaniline) | | |
| p-Chloroaniline (CAS 106-47-8) | 0.46 | 16 (1) |
| P029 (Copper cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.1 | 9.1 |
| P030 (Cyanides (soluble salts and complexes)) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amendable) (CAS 57-12-5) | 0.1 | 9.1 |
| P036* (Dichlorophenylarsine) | | |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| P037 | | |
| Dieldrin (CAS 60-57-1) | 0.017 (2) | 0.13 (1) |
| P038* (Diethylarsine) | | |
| Arsenic (CAS 7440-38-2) | 0.79 | NA |
| P039 | | |
| Disulfoton (CAS 298-04-4) | 0.017 | 0.1 (1) |
| P047 | | |
| 4,6-Dinitro-o-cresol (CAS 534-52-1) | 0.28 | 160 (1) |
| P048 | | |
| 2,4-Dinitrophenil (CAS 51-28-5) | 0.12 (2) | 160 (1) |
| P050 | | |
| Endosulfan I (CAS 939-98-8) | 0.023 (2) | 0.066 (1) |
| Endosulfan II (CAS 33213-6-5) | 0.029 (2) | 0.13 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| Endosulfan sulfate (CAS 1031-07-8) | 0.029 (2) | 0.13 (1) |
| P051 | | |
| Endrin (CAS 72-20-8) | 0.0028 (2) | 0.13 (1) |
| Endrin aldehyde (CAS 7421-93-4) | 0.025 (2) | 0.13 (1) |
| P056** | | |
| Fluoride (CAAS 16964-48-8) | 35 | NA |
| P059 | | |
| Heptachlor (CAS 76-44-8) | 0.0012 (2) | 0.066 (1) |
| Heptachlor epoxide (CAS 1024-57-3) | 0.016 (2) | 0.066 (1) |
| P060 | | |
| Isodrin (CAS 465-73-6) | 0.021 (2) | 0.066 (1) |
| P063 (Hydrogen cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.10 | 9.1 |
| P065*** (Mercury fulminate) | | |
| Mercury (CAS 7439-97-6) | 0.030 | NA |
| P071 | | |
| Methyl parathion (CAS 298-00-0) | 0.025 | 0.1 (1) |
| P073* (Nickel carbonyl) | | |
| Nickel (CAS 7440-02-0) | 0.32 | NA |
| P074* (Nickel cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.10 | 9.1 |
| Nickel (CAS 7440-02-0) | 0.44 | NA |
| P077 | | |
| p-Nitroaniline (CAS 100-01-6) | 0.028 (2) | 28 (1) |
| P082** | | |
| N-Nitrosodimethylamine (CAS 62-75-9) | 0.40 (2) | NA |
| P089 | | |
| Parathion (CAS 56-38-2) | 0.025 | 0.1 (1) |
| P092*** (Phenylmercury acetate) | | |
| Mercury (CAS 7439-97-6) | 0.030 | NA |
| P094 | | |
| Phorate (CAS 298-02-2) | 0.025 | 0.1 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|--|-------------------------------------|---|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| P097 | | |
| Famphur (CAS 52-85-7) | 0.025 | 0.1 (1) |
| P098 (Potassium cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.10 | 9.1 |
| P099* (Potassium silver cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.1 | 9.1 |
| Silver (CAS 7440-22-4) | 0.29 | NA |
| P101 | | |
| Ethyl cyanide (Propanenitrite) (CAS 107-12-0) | 0.24 (2) | 360 (1) |
| P103* (Selemourea) | | |
| Selenium (CAS 7782-49-2) | 1.0 (2) | NA |
| P104* (Silver cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amendable) (CAS 57-12-5) | 0.10 | 9.1 |
| Silver (CAS 7440-22-4) | 0.29 | NA |
| P106 (Sodium cyanide) | | |
| Cyanides (Total) (CAS 57-12-5) | 1.9 | 110 |
| Cyanides (Amenable) (CAS 57-12-5) | 0.10 | 9.1 |
| P110*** (Tetraethyl lead) | | |
| Lead (CAS 7439-92-1) | 0.040 | NA |
| P113** (Thallic oxide) | | |
| Thallium (CAS 7440-28-0) | 0.14 (2) | NA |
| P114* (Thallium selenite) | | |
| Selenium (CAS 7782-49-2) | 1.0 | NA |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|--|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| P115** (Thallium(1)sulfate) Thallium (CAS 7440-28-0) | 0.14 (2) | NA |
| P119** (Ammonia vandate) Vanadium (CAS 7440-62-2) | 28 (2) | NA |
| P120** (Vanadium pentoxide) Vanadium (CAS 7440-62-2) | 28 (2) | NA |
| P121 (Zinc cyanide) Cyanides (Total) (CAS 57-12-5) Cyanides (Amenable) (CAS 57-12-5) | 1.9 0.10 | 110 9.1 |
| P123 Toxaphene (CAS 8001-35-1) | 0.0095 (2) | 1.3 (1) |
| U002 Acetone (CAS 67-64-1) | 0.28 | 160 (1) |
| U003** Acetonitrile (CAS 75-05-8) | 0.17 | 0.17 |
| U004 Acetophenone (CAS 98-86-2) | 0.010 (1) | 9.7 (1) |
| U005 2-Acetylaminofluorene (CAS 53-96-3) | 0.059 (2) | 140 (1) |
| U009 Acrylonitrile (CAS 107-13-1) | 0.24 (2) | 84 (1) |
| U012 Aniline (CAS 62-53-3) | 0.81 | 14 (1) |
| U018 Benz(a)anthracene (CAS 56-55-3) | 0.059 (2) | 8.2 (1) |
| U019 Benzene (CAS 71-34-2) | 0.14 (2) | 36 (1) |
| U022 Benzo(a)pyrene (CAS 50-32-8) | 0.061 (2) | 8.2 (1) |
| U024 Bis(2-chloroethoxy)methane (CAS 111-91-1) | 0.036 | 7.2 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U025 Bis(2-chloroethyl)ether (CAS 111-44-4) | 0.033 | 7.2 (1) |
| U027 Bis(2-chloroisopropyl)ether (CAS 39638-32-9) | 0.055 (2) | 7.2 (1) |
| U028 Bis(2-ethylhexyl)phthalate (CAS 117-81-7) | 0.54 (1) | 28 (1) |
| U029 Bromomethane (Methyl bromide) (CAS 74-83-9) | 0.11 (1) | 15 (1) |
| U030 4-Bromophenyl phenyl ether (CAS 101-55-3) | 0.055 (1) | 15 (1) |
| U031 n-Butyl alcohol (CAS 71-36-3) | 5.6 | 2.6 |
| U032* (Calcium chromate) Chromium (Total) (CAS 7440-47-32) | 0.32 | NA |
| U036 Chlordane (alpha and gamma) (CAS 57-74-9) | 0.033 (2) | 0.13 (1) |
| U037 Chlorobenzene (CAS 108-90-7) | 0.057 (2) | 5.7 (1) |
| U038** Chlorobenzilate (CAS 510-15-6) | 0.10 (2) | NA |
| U039 p-Chloro-m-cresol (CAS 59-50-7) | 0.018 (2) | 14 (1) |
| U042** 2-Chloroethylvinyl (CAS 110-75-8) | 0.057 | NA |
| U043 Vinyl chloride (CAS 75-01-4) | 0.27 (2) | 33 (1) |
| U044 Chloroform (CAS 67-66-3) | 0.046 (2) | 5.6 (1) |
| U045 Chloromethane (Methyl chloride) (CAS 74-87-3) | 0.19 (2) | 33 (1) |
| U047 2-Chloronaphalene (CAS 91-58-7) | 0.055 (2) | 5.6 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U048 2-Chlorophenol (CAS 95-57-8) | 0.044 (2) | 5.7 (1) |
| U050 Chrysene (CAS 218-01-9) | 0.059 (2) | 8.2 (1) |
| U051* (Creosote) | | |
| Napthalene (CAS 91-20-3) | 0.031 | 1.5 (1) |
| Pentachlorophenol (CAS 87-86-5) | 0.18 | 7.4 (1) |
| Phenanthrene | | |
| Pyrene (CAS 85-01-8) | 0.031 | 1.5 (1) |
| Toluene (CAS 129-00-0) | 0.028 | 1.5 (1) |
| Xylenes (Total) (CAS 108-88-3) | 0.028 | 28 (1) |
| Lead | 0.032 | 33 (1) |
| (CAS 7439-92-1) | 0.037 | NA |
| U052 (Cresols - Cresylic acid) | | |
| o-Cresol (CAS 95-48-7) | 0.11 (2) | 5.6 (1) |
| Cresols (m- and p- isomers) | 0.77 (2) | 3.2 (1) |
| U057** | | |
| Cyclohexanone (CAS 108-94-1) | 0.36 | NA |
| U060 (DDD) | | |
| o,p'-DDD (CAS 53-19-0) | 0.023 | 0.087 (1) |
| o,p'-DDD (CAS 72-54-8) | 0.023 | 0.087 (1) |
| U061 (DDT) | | |
| o,p'-DDT (CAS 780-02-6) | 0.0039 (2) | 0.087 (1) |
| p,p'-DDT (CAS 50-29-3) | 0.0039 (2) | 0.087 (1) |
| o,p'-DDD (CAS 53-19-0) | 0.023 (2) | 0.087 (1) |
| p,p'-DDD (CAS 72-54-8) | 0.023 (2) | 0.087 (1) |
| o,p'-DDE (CAS 3424-82-6) | 0.031 (2) | 0.087 (1) |
| p,p'-DDE (CAS 72-55-9) | 0.031 (2) | 0.087 (1) |
| U063 | | |
| Dibenzo(a,h)anthracene (CAS 53-70-3) | 0.055 (2) | 8.2 (1) |
| U066 | | |
| 1,2-Dibromo-3-chloropropane (CAS 96-12-8) | 0.11 (2) | 15 (1) |
| U067 | | |
| 1,2-Dibromoethane (Ethylene dibromide) (CAS 106-93-4) | 0.028 (2) | 15 (1) |
| U068 | | |
| Dibromomethane (CAS 74-95-3) | 0.11 (2) | 15 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U069 Di-n-butyl phthalate (CAS 84-74-2) | 0.54 (1) | 28 (1) |
| U070 o-Dichlorobenzene (CAS 95-50-1) | 0.088 (2) | 6.2 (1) |
| U071 m-Dichlorobenzene (CAS 541-73-1) | 0.036 | 6.2 (1) |
| U072 p-Dichlorobenzene (CAS 104-46-7) | 0.090 (2) | 6.2 (2) |
| U075 Dichlorodifluoromethane (CAS 75-71-8) | 0.23 (2) | 7.2 (1) |
| U076 1,1-Dichloroethane (CAS 75-34-3) | 0.059 (2) | 7.2 (1) |
| U077 1,2-Dichloroethane (CAS 107-06-2) | 0.21 (2) | 7.2 (1) |
| U078 1,1-Dichloroethylene (CAS 75-35-4) | 0.025 (2) | 33 (1) |
| U079 (1,2-Dichloroethylene) trans-1,2-Dichloroethylene (CAS 156-60-5) | 0.054 (2) | 33 (1) |
| U080 Methylene chloride (CAS 75-09-2) | 0.089 (2) | 33 (1) |
| U081 2,4-Dichlorophenol (CAS 120-83-2) | 0.044 (2) | 14 (1) |
| U082 2,6-Dichlorophenol (CAS 87-65-0) | 0.044 (2) | 14 (1) |
| U083 1,2-Dichlorophenol (CAS 78-87-5) | 0.85 (2) | 18 (1) |
| U084 (1,3-Dichloropropene) cis-1,3-Dichloropropylene (CAS 10061-01-5) | 0.036 (2) | 18 (1) |
| trans-1,3-Dichloropropylene (CAS 10061-02-6) | 0.036 (2) | 18 (1) |
| U088 Diethyl phthalate (CAS 84-66-2) | 0.54 (2) | 28 (1) |
| U093** p-Dimethylaminoazobenzene (CAS 60-11-7) | 0.13 (2) | NA |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U101 2,4-Dimethylphenol (CAS 105-67-9) | 0.036 (2) | 14 (1) |
| U102 Dimethyl phthalate (CAS 131-11-3) | 0.54 (1) | 28 (1) |
| U105 2,4-Dinitrotoluene (CAS 121-14-2) | 0.32 (2) | 140 (1) |
| U106 2,6-Dinitrotoluene (CAS 606-20-2) | 0.55 (2) | 28 (1) |
| U107 Di-n-octyl phthalate (CAS 117-84-0) | 0.54 (1) | 28 (1) |
| U108 1,4-Dioxane (CAS 123-91-1) | 0.12 (2) | 170 (1) |
| U111 Di-n-propylnitrosoamine (CAS 621-64-7) | 0.40 (2) | 14 (1) |
| U112 Ethyl acetate (CAS 141-78-6) | 0.34 (2) | 33 (1) |
| U117 Ethyl ether (CAS 60-29-7) | 0.12 (2) | 160 (1) |
| U118 Ethyl methacrylate (CAS 97-63-2) | 0.14 (2) | 160 (1) |
| U120 Floranthene (CAS 206-44-0) | 0.068 (2) | 8.2 (1) |
| U121 Trichloromonofluoromethane (CAS 75-69-4) | 0.020 (2) | 33 (1) |
| U127 Hexachlorobutadiene (CAS 118-74-1) | 0.055 (2) | 37 (1) |
| U128 Hexachlorobutadiene (CAS 87-68-3) | 0.055 (2) | 28 (1) |
| U129 (Lindane) | | |
| alpha-BHC (CAS 319-84-6) | 0.00014 (2) | 0.66 (1) |
| beta-BHC (CAS 319-85-7) | 0.00014 (2) | 0.66 (1) |
| Delta-BHC (CAS 319-86-8) | 0.023 (2) | 0.66 (1) |
| gamma-BHC (Lindane) (CAS 58-89-9) | 0.0017 (2) | 0.66 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U130 Hexachlorocyclopentadiene (CAS 77-47-7) | 0.057 (2) | 3.6 (1) |
| U131 Hexachloroethane (CAS 67-72-1) | 0.055 (2) | 28 (1) |
| U134** (Hydrogen fluoride) Fluoride (CAS 16964-48-8) | 35 | NA |
| U136* (Cacodylic acid) Arsenic (CAS 7440-38-2) | 0.79 | NA |
| U137* Indeno(1,2,3-c,d)pyrene (CAS 193-39-5) | 0.0055 (2) | 6.2 (1) |
| U138 Iodomethane (CAS 74-88-4) | 0.19 (2) | 65 (1) |
| U140 Isobutyl alcohol (CAS 78-83-1) | 5.6 | 170 (1) |
| U141 Isosafrole (CAS 120-58-1) | 0.081 | 2.6 (1) |
| U142 Kepone (CAS 143-50-8) | 0.0011 | 0.13 (1) |
| U144* (Lead acetate) Lead (CAS 7439-92-1) | 0.040 | NA |
| U145* (Lead phosphate) Lead (CAS 7439-92-1) | 0.040 | NA |
| U146* (Lead subacetate) Lead (CAS 7439-92-1) | 0.040 | NA |
| U151*** Mercury (CAS 7439-97-6) | 0.030 | NA |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U152 Methacrylonitrile (CAS 126-98-7) | 0.24 (2) | 84 (1) |
| U154 Methanol (CAS 67-56-1) | 5.6 | NA |
| U155 Methapyrilene (CAS 91-80-5) | 0.081 | 1.5 (1) |
| U157 3-Methylcholanthrene (CAS 56-49-5) | 0.0055 (2) | 15 (1) |
| U158 4,4'-Methylenebis(2-chloroaniline) (CAS 101-14-4) | 0.50 (2) | 35 (1) |
| U159 Methyl ethyl ketone (CAS 78-93-3) | 0.28 | 36 (1) |
| U161 Methyl isobutyl ketone (CAS 108-10-1) | 0.14 | 33 (1) |
| U162 Methyl methacrylate (CAS 60-62-6) | 0.14 | 160 (1) |
| U165 Naphthalene (CAS 91-20-3) | 0.059 (2) | 3.1 (1) |
| U168** 2-Naphthylamine (CAS 91-59-8) | 0.52 (2) | NA |
| U169 Nitrobenzene (CAS 98-95-3) | 0.068 (2) | 14 |
| U170 4-Nitrophenol (CAS 100-02-7) | 0.12 (2) | 29 (1) |
| U172 n-Nirosodi-n-butylamine (CAS 924-16-3) | 0.040 (2) | 17 (1) |
| U174 n-Nitrosodiethylamine (CAS 55-18-5) | 0.40 (2) | 28 (1) |
| U179 n-Nitrosopipendien (CAS 100-75-4) | 0.013 (2) | 35 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U180 n-Nitropyrrolidine (CAS 930-55-2) | 0.013 (2) | 35 (1) |
| U181 5-Nitro-o-toluidine (CAS 99-55-8) | 0.32 (2) | 28 (1) |
| U183 Pentachlorobenzene (CAS 608-93-5) | 0.055 (2) | 37 (1) |
| U185 Pentachloronitrobenzene (CAS 82-68-8) | 0.055 (2) | 4.8 (1) |
| U187 Phenacetin (CAS 62-44-2) | 0.081 | 16 (1) |
| U188 Phenol (CAS 108-95-2) | 0.039 | 6.2 (1) |
| U190 Phthalic anhydride (CAS 85-44-9) (measured as Phthalic acid) | 0.54 (1) | 28 (1) |
| U192 Pronamide (CAS 23950-58-5) | 0.093 | 1.5 (1) |
| U196 Pyridine (CAS 110-86-1) | 0.014 (2) | 16 (1) |
| U203 Safrole (CAS 94-59-7) | 0.081 | 22 (1) |
| U204* (Selenium dioxide) Selenium (CAS 7782-49-2) | 1.0 | NA |
| U205* (Selenium sulfide) Selenium (CAS 7782-49-2) | 1.0 | NA |
| U207 1,2,4,5-Tetrachlorobenzene (CAS 95-94-3) | 0.055 (2) | 19 |
| U208 1,1,1,2-Tetrachloroethane (CAS 630-20-6) | 0.057 | 42 |
| U209 1,1,2,2-Tetrachloroethane (CAS 79-34-5) | 0.057 (2) | 42 (1) |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U210 Tetrachloroethylene (CAS 127-18-4) | 0.056 (2) | 5.6 (1) |
| U211 Carbon tetrachloride (CAS 56-23-5) | 0.057 (2) | 5.6 (1) |
| U214** (Thallium(I)acetate) Thallium (CAS 7440-28-0) | 0.14 (2) | NA |
| U215** (Thallium(I)carbonate) Thallium (CAS 7440-28-0) | 0.14 (2) | NA |
| U216** (Thallium(I)chloride) Thallium (CAS 7440-28-0) | 0.14 (2) | NA |
| U217** (Thallium(I)nitrate) Thallium (CAS 7440-28-0) | 0.14 (2) | NA |
| U220 Toluene (CAS 108-88-3) | 0.080 (2) | 28 (1) |
| U225 Tribromomethane (Bromoform) (CAS 75-25-2) | 0.63 (2) | 15 (1) |
| U226 1,1,1-Trichloroethane (CAS 71-55-6) | 0.054 (2) | 5.6 (1) |
| U227 1,1,2-Trichloroethane (CAS 79-00-5) | 0.054 (2) | 5.6 (1) |
| U228 Trichloroethylene (CAS 79-01-6) | 0.054 (2) | 5.6 (1) |
| U235 tris-(2,3-Dibromopropyl) phosphate (CAS 126-72-7) | 0.025 | 0.10 (1) |
| U239 Xylenes | 0.32 (2) | 28 (1) |
| U240 2,4-Dichlorophenoxyacetic acid (CAS 94-75-7) | 0.72 | 10 (1) |
| U243 Hexachloropropene (CAS 1888-71-7) | 0.035 (2) | 28 |

Appendix 4-7 (continued)

| Waste Codes Regulated Hazardous Constituent with Applicable CAS No. | Concentrations | |
|---|-----------------------------|---------------------------------|
| | Wastewaters (mg/L) Notes | Nonwastewaters (mg/kg) Notes |
| U247 Methoxyxhlor (CAS 72-43-5) | 0.25 (2) | 0.18 (1) |

*See also Table CCWE in 40 CFR 268.41

** See also Table 2 in 40 CFR 268.42

*** See also Table CCWE in 40 CFR 268.41 and Table 2 in 40 CFR 268.42

1. Treatment standards for this organic constituent were established based upon incineration in units operated in accordance with the technical requirements of 40 CFR 264 Subpart O or 265 Subpart O, or based upon combustion in fuel substitution units operating in accordance with applicable technical requirements. A facility may certify compliance with these treatment standards according to provisions in 40 CFR 268.7.
2. Based on analysis of composite samples.
3. As analyzed using SW-846 Method 9010 or 9012; sample size 10 g; distillation time 1 h and 15 min.

Appendix 4-8

Land Disposal Restricted Wastes Treatment Standards (40 CFR 268, Appendix II)

| CONSTITUENTS OF F001-F005 SPENT SOLVENT WASTES | WASTE TREATABILITY GROUPS FOR F001-F005 SPENT SOLVENT WASTES (in mg/L) | |
|--|---|--------|
| | WASTEWATER | OTHER* |
| | | |
| Acetone | 0.05 | 0.59 |
| n-Butyl alcohol | 5.00 | 5.00 |
| Carbon disulfide | 1.05 | 4.81 |
| Carbon tetrachloride | 0.05 | 0.96 |
| Chlorobenzene | 0.15 | 0.05 |
| Cresols (cresylic acid) | 2.82 | 0.75 |
| Cyclohexanone | 0.125 | 0.75 |
| 1,2-Dichlorobenzene | 0.65 | 0.125 |
| Ethyl acetate | 0.05 | 0.75 |
| Ethylbenzene | 0.05 | 0.053 |
| Ethyl ether | 0.05 | 0.75 |
| Isobutanol | 5.00 | 5.00 |
| Methanol | 0.25 | 0.75 |
| Methylene chloride | 0.20 | 0.96 |
| Methyl ethyl ketone | 0.05 | 0.75 |
| Methyl isobutyl ketone | 0.05 | 0.33 |
| Nitrobenzene | 0.66 | 0.125 |
| Pyridine | 1.12 | 0.33 |
| Tetrachloroethylene | 0.079 | 0.05 |
| Toluene | 1.12 | 0.33 |
| 1,1,1-Trichloroethane | 1.05 | 0.41 |
| 1,1,2 Trichloro-1,2,2-trifluoroethane | 1.05 | 0.96 |
| Trichloroethylene | 0.062 | 0.091 |
| Trichlorofluoromethane | 0.05 | 0.96 |
| Xylene | 0.05 | 0.15 |

* The treatment standards in this treatability group are based on incineration.

Section 5

Natural Resources Management

SECTION 5

NATURAL RESOURCES MANAGEMENT

A. Applicability

This section applies to all Civil Works facilities. Plans and programs for protection and management of natural resources such as soil, water, plants, and wildlife are included in this section.

This section integrates the requirements of these regulations into a single document that normally will apply to any facility with land management programs.

B. Federal Legislation

- *The National Environmental Policy Act (NEPA) of 1970.* The purpose of this Act, 42 U.S. Code (USC) 4321-4370c, as last amended in November 1990, was to declare a national policy which will encourage productive and enjoyable harmony between man and his environment. Additionally it provides for the promotion of efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man (42 USC 4321).
- *Endangered Species Act (ESA) of 1973.* The purpose of this Act, (16 USC 1531-1547, et al, last amended in October, 1988), is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions for protection of endangered species (16 USC 1531(b)).
- *Sikes Act of 1960.* This Act, (16 USC 670a-670o, last amended in November 1989), authorizes the Secretary of Defense to carry out a program of planning, development, maintenance and coordination of wildlife, fish and game conservation and rehabilitation in military reservations in accordance with a cooperative plan mutually agreed upon by the Secretary of Defense, the Secretary of the Interior (SOI), and the appropriate state agency designated by the state in which the reservation is located (16 USC 670a(a)).
- *The Fish and Wildlife Conservation Act (FWCA) of 1980* (Public Law (PL) 96-366; 16 USC 2901 et seq) promotes state programs for the purpose of conserving, restoring, or otherwise benefiting nongame fish and wildlife, their habitats, and their uses.

- PL 86-337 (10 USC 2671) requires that all hunting, fishing, and trapping on USACE facilities be in accordance with the fish and game laws of the state in which the facility is located and that the hunters, fishers, and trappers possess appropriate state licenses.
- 10 USC 2665 provides for sales of forest products on Corps facilities. Funds generated by these sales are used to reimburse the forest management expenses and pay state entitlement (40 percent of facility net proceeds go to the state for county roads and schools).
- *Wild and Scenic Rivers Act of 1986*. This Act, (16 USC 1271-1287, last amended in May 1991), outlines the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, must be preserved in free-flowing condition, and that they and their immediate environments must be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and fulfill other vital national conservation purposes (16 USC 1271).

The purpose of this Act is to implement the declared policy of Congress by instituting a national wild and scenic rivers system, by designing the initial components of that system, and by prescribing the methods by which and standards to which additional components may be added to the system from time to time (16 USC 1272).

- *Farmland Protection Policy Act of 1981*. Within this Act, (7 USC 4201-4209, last amended in December 1991), Congress declares:
 - Federal actions, in many cases, result in the conversion of farmland to nonagricultural uses where alternative actions would be preferred
 - the Department of Agriculture is the agency primarily responsible for the implementation of federal policy with respect to U.S. farmland, assuring the maintenance of the agricultural production capacity of the United States, and
 - the Department of Agriculture and other federal agencies should take steps to assure that the actions of the federal government do not cause U.S. farmland to be irreversibly converted to nonagricultural uses in cases in which other national interests do not override the importance of the protection of farmland nor otherwise outweigh the benefits of maintaining farmland resources (7 USC 4201(a)).

The purpose of this Act is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that, to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland (7 USC 4201(b)).

- *Executive Order (EO) 11514*. This EO, issued on 5 March 1970 and amended by EO 11991, is a Presidential order which implements the *NEPA* of 1969. Under this EO, *Protection and Enhancement of Environmental Quality*, the Federal Government must provide leadership in protecting and enhancing the quality of the nation's environment to sustain and enrich human life. Federal agencies must initiate measures needed to direct their policies, plans, and programs so as to meet national environmental goals.
- EO 11987. This EO, *Exotic Organisms*, requires executive agencies to restrict the introduction of exotic species into natural ecosystems which they own or lease, and encourages the states to prevent such introductions.
- *Clean Water Act (CWA)*. Section 404 of the CWA (32 USC 1344) requires the identification, delineation, and protection of wetlands, and permits for actions that affect wetlands.
- EO 11988, *Floodplain Management*, and 11990, *Protection of Wetlands*. These EOs address the actions Federal agencies must take to:
 1. identify and protect wetlands and floodplains
 2. minimize the risk of flood loss and destruction of wetlands
 3. preserve and enhance the natural and beneficial values of both floodplains and wetlands.
- EO 11989. This EO, *Use of Off-Road Vehicles (ORVs) on the Public Lands*, specifies that ORVs may not be used on Federal lands without special use permits and only within specified locations.
- *The Migratory Bird Treaty Act* (PL 65-186; 50 CFR 20) protects migratory birds, their nests, and their eggs. Construction, repairs, and other such actions that can harm nests, eggs, or individual birds are covered under the Act. A depredation permit is required before any person may take, possess, or transport migratory birds, or disturb their nests, eggs, or young.
- EO 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for ensuring that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state,

and local environmental requirements and for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency provide sufficient funds for environmental compliance in its budget.

C. State/Local Regulations

States develop lists for their local endangered species.

States develop regulations and good management practices (GMPs) for the protection of surface waters and prevention of nonpoint source pollution. These GMPs primarily apply to agricultural and silvicultural (forestry) activities, but are also to be followed whenever an activity might affect surface waters or contribute to nonpoint source pollution. States establish regulations governing hunting and fishing activities. Special regulations for activities on Corps facilities may be developed in cooperation with the state wildlife management agency.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- Engineering Manual (EM) 385-1-1, *Safety and Health Requirements Manual*. This manual provides for the protection of natural resources through the development of wildfire prevention plan and a wildfire control plan.
- ER 200-2-2, *Procedures for Implementing NEPA*. This regulation provides instructions on the creation of environmental assessment (EA) and environmental impact statement (EIS) documents.
- ER 1130-2-400, *Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects*. This regulation outlines the basic parameters of the Natural Resources Management Program.
- ER 1130-2-406, *Shoreline Management at Civil Works Projects*. This regulation provides policy and guidance on the management of shorelines at Civil Works projects.
- ER 1130-2-435, *Preparation of Project Master Plans*. This regulation outlines the required contents of the Master Plan, which is a vital part of natural resources management.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to

prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

- Supplemental information can be found in the following ERs and manuals:

| | |
|---------------|---|
| ER 1110-2-400 | <i>Design of Recreation Sites, Areas, and Facilities</i> |
| ER 1130-2-405 | <i>Use of Off-Road Vehicles on Civil Works Projects</i> |
| ER 1130-2-411 | <i>Regulation of Seaplane Operations at Civil Works Water Resource Projects</i> |
| ER 1130-2-414 | <i>Natural Resource Management System</i> |
| ER 1165-2-400 | <i>Recreation, Planning, Development, and Management Policies</i> |
| EM 1110-1-400 | <i>Recreation Planning and Design Criteria.</i> |

E. Key Compliance Requirements

- **Plans** - The facility is required to develop master plans and keep them current for all Civil Works projects and other fee owned lands for which the Corps has administrative responsibility for management. Water resources projects are required to develop and maintain a project operational management plan (OMP) (ER 1130-2-400, para 6 and para 9-11 and ER 1130-2-435 para 5, para 8, and para 9).
- **Land Management** - A protective vegetative cover or other measure shall be provided to control dust and erosion damage. Known inactive hazardous waste sites should be identified. Facilities and areas with potential exposure to wildfire are required to develop a wildfire prevention plan and a wildfire control plan (EM 385-1-1, para 09.K.01 and para 09.K.02; ER 1110-1-400, para 5-4 and ER 1130-2-400 para 11(c)(1)).
- **Floodplains/Wetlands** - Floodplains and wetlands should be identified and protected by reviewing the OMP (GMP).
- **Forests** - Effective forest management will provide for the sustained production of timber and/or be compatible with multiple use resource management objectives. This includes ensuring that volume inventories are kept, and small volume sales are done in accordance with regulations. Emphasis should be placed on the maintenance and restoration of habitat favorable to the production of indigenous fish and wildlife. The fish and wildlife plan should address managing all indigenous species (ER 1130-2-400, para 11(1)).
- **Shoreline** - Each Corps project where private shoreline use is allowed will have a Lakeshore Management Plan, which will contain an area allocation map.

descriptions of recreational waste management systems, and a plan for managing the lakeshore. The plan is required to be reviewed every 5 yr (ER 1130-2-406, para 4(c)).

- **Endangered/Threatened Species** - Facilities with Federally designated endangered and threatened species must carry out programs for their conservation. A survey will be done to determine if the facility has any such species, and measures taken to maintain them. All facilities must review proposed actions and activities to ensure that they are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat (40 CFR 1500, 50 CFR 402.01(a), 402.10, and 402.12; ER 200-2-2).
- **EISs/EAs** - A facility must produce an EIS if a proposed action causes potential for significant degradation of environmental quality, significant threat to public health or safety, there is public controversy concerning significance or nature of the biophysical, environmental impact of an action, or potential for significant impact on protected natural or historic sources. An EA may be produced before any contract for action is entered into or action is begun to determine if an EIS is necessary. All EAs must prompt either the preparation of a finding of no significant impact (FNSI) or an EIS. When used, FNSIs must contain certain elements, such as the name of the action, a brief description of the action, a discussion of environmental effects, the conclusions that have led to the FNSI, and the date of approval and Environmental Protection Committee (EPC) chairperson's signature. If an EIS must be prepared, the facility must then follow the directions outlined in 32 CFR 989.12 and supplemented by ER 200-2-2 for preparing and processing an EIS (40 CFR 1502.4, 1502.10 through 1502.13, 1503.4(i), 1508.9, and 1508.13; ER 200-2-2 para 6 and para 10 through para 13).

F. Key Compliance Definitions

- **Action** - all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to (50 CFR 402.02):
 1. actions intended to conserve listed species or their habitats
 2. the promulgation of regulations
 3. the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid
 4. actions directly or indirectly causing modifications to the land, water, or air.
- **Action Area** - all areas that will be affected directly or indirectly by a Federal action, not merely the immediate area involved in the action (50 CFR 402.02).

- *Candidate Species* - any species being considered by the SOI for listing as threatened or endangered species (50 CFR 404.02).
- *Critical Habitat* - specific areas within the geographic area commonly occupied by a species which contain features essential to the conservation of the species and which may require special management considerations or protection. Specific areas outside the currently occupied range of a threatened or endangered species may be determined by the SOI as areas essential for the conservation of the species (50 CFR 424.02).
- *Destruction or Adverse Modification* - a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical (50 CFR 402.02).
- *Endangered Species* - any species in danger of extinction throughout all or a significant portion of its range (other than a species of the Class Insect determined to constitute a pest). Federally listed endangered species are officially designated by the Department of the Interior (DOI) (50 CFR 81.1).
- *Environmental Assessment (EA)* - a concise public document for which a Federal agency is responsible that serves to provide sufficient evidence and analysis for determining whether to prepare an EIS or an FNSI (40 CFR 1508.9).
- *Environmental Impact Statement (EIS)* - a detailed statement by the responsible official on: (40 CFR 1508.11)
 1. the environmental impact of the proposed action
 2. any adverse environmental effects which cannot be avoided should the proposal be implemented
 3. alternatives to the proposed action
 4. the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.
 5. any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.
- *FNSI (Finding of No Significant Impact)* - a document that briefly presents the reasons why an action, not otherwise excluded, does not need an EIS (40 CFR 1508.13).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Jeopardize the Continued Existence of* - to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood

of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

- *NOI (Notice Of Intent)* - a notice that an EIS will be prepared and considered. It should contain (40 CFR 1508.22):
 1. a description of the proposed action and possible alternatives
 2. the proposed scoping process and schedule
 3. the name and address of the person who can give more information.
- *Threatened Species* - any species likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. Federally listed threatened species are officially designated by the DOI (50 CFR 81.21).

NATURAL RESOURCES MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|----------------------------------|---------------------------------|--|
| All Facilities | 5-1 through 5-6 | (1)(5)(6)(13)(15)(16) |
| Land Management | | |
| General | 5-7 and 5-8 | (5)(6)(7)(10)(12)(13)(15)(16) |
| Floodplains/Wetlands | 5-9 | (6)(10)(13)(15) |
| Forests | 5-10 and 5-11 | (6)(13)(15) |
| Shorelines | 5-12 | (6)(13)(15) |
| Endangered/Threatened Species | 5-13 and 5-14 | (6)(13)(15) |
| EISs/EAs | 5-15 through 5-19 | (5)(6)(13)(15) |

(a) CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

NATURAL RESOURCES MANAGEMENT

Records to Review

- Environmental Impact Documentation
- Master Plan
- Project Master Plan
- OMP
- Land Use Plan
- Land Management Plan
- Fish and Wildlife Plan
- Fish and Wildlife Cooperative Agreement
- Outdoor Recreation Plan
- Outdoor Recreation Cooperative Agreement
- Cropland and Grazing Plan
- Forest Management Plan
- Grounds Maintenance Contracts
- Agricultural and Grazing Lease Contracts

Physical Features to Inspect

- Construction sites (erosion control, runoff, sedimentation, and landscaping)
- Facilities constructed in the past 2 yr (erosion and landscaping)
- Wildlife containment areas (condition and management)
- Wildlife habitat and land and water resources (condition and management)
- Equipment that could damage wildlife, its habitat, or land and water resources (use and control)
- Grounds maintenance areas (beautification and condition)
- Forest management areas (condition and management)
- Agricultural and grazing lease areas (condition and management)
- Stormwater drainage areas and improvements (condition)
- Erosion sites (condition and erosion)
- Shorelines

People to Interview

- Natural Resources Management (Division, District)
- Environmental Compliance Coordinator (ECC)
- Engineering
- Operations
- Real Estate
- Planning
- Project Resource Manager
- Facility Managers

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. The chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 5-1 through 5-7 | 5-1 through 5-7 |
| no match | 5-8 |
| 5-9 through 5-19 | 5-9 through 5-19 |

| | | | |
|-------------------------|--|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: NATURAL RESOURCES MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

**COMPLIANCE CATEGORY:
NATURAL RESOURCES MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>ALL FACILITIES</p> <p>5-1. Determine actions or changes since previous review of natural resources management (GMP).</p> <p style="text-align: center;">...</p> <p>5-2. Facilities should have access to a current file of applicable Federal, engineering, DOD, and state/local regulations for natural resources management (GMP).</p> <p style="text-align: center;">...</p> | <p>Determine, by obtaining a copy of the previous review, if noncompliance issues have been resolved. (5)(6)(13)(15)(16)</p> <p style="text-align: center;">...</p> <p>Determine if copies of the following documents are maintained and kept current at the facility or district or division offices. (1)(5)(6)(13)(15)(16)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance With Pollution Control Standards</i>. - 40 CFR 1500-1508, <i>Council on Environmental Quality</i>. - 50 CFR 17, <i>Endangered and Threatened Wildlife and Plants</i>. - 50 CFR 402, <i>Interagency Cooperation-Endangered Species Act 1973, as amended</i>. - ER 200-2-2, <i>Procedures for Implementing NEPA</i>. - ER 1130-2-400, <i>Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects</i>, 1 June 1986. - ER 1130-2-406, <i>Shoreline Management at Civil Works Projects</i>, 31 October 1990. - ER 1130-2-435, <i>Preparation of Project Master Plans</i>, 30 December 1987. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - EM 385-1-1, <i>Safety and Health Requirements Manual</i>, October 1992. - EM 1110-1-400, <i>Recreation Planning and Design Criteria</i>, 31 July 1987. - Applicable state and local regulations. <p style="text-align: center;">...</p> |

DIVISION: (1) Natural Resources Management **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (12) Real Estate (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
NATURAL RESOURCES MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>5-3. Facilities are required to comply with state and local regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> | <p>Verify that the facility is complying with state and local requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by state or local agencies. (5)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - endangered and threatened species lists - hunting and trapping restrictions - erosion control requirements - surface mining - gravel pits - sand pits - rock quarries - mineral exploration - coal mining - wild and scenic rivers - wetlands management - floodplains designation and management - coastal zones management.) <p>(NOTE: Mining includes surface and subsurface mining.)</p> <p>Verify that if there are private interests with mineral rights (including the production of oil) on or beneath Corp-owned property which are not under any real estate instrument with the Corps, the private interest is in compliance with state regulations pertaining to exploration, drilling, and production. (6)(15)</p> <p>Verify that in instances of noncompliance, the Project has initiated coordination or contact with local state authorities. (6)(15)</p> <p>Verify that Project personnel are also using all Federally authorized instruments of compliance to obtain compliance such as those addressed in Title 36 of the CFR. (6)(15)</p> |

DIVISION: (1) Natural Resources Management **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (12) Real Estate (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
NATURAL RESOURCES MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>5-4. Master plans are required to be developed and kept current for all Civil Works projects and other fee owned lands for which the Corps has administrative responsibility for management (ER 1130-2-435, para 5, para 8, and para 9).</p> <p>...</p> | <p>Verify that at a minimum the master plan contains the following elements: (6)(15)</p> <ul style="list-style-type: none"> - an introduction detailing information on project authorization, land allocations, descriptions, and listings of prior and proposed design memorandum - resource objectives - resource analysis - recreation program analysis - summary of results from public meetings and workshops of public involvement and coordination - land allocation - land classification - resource plan - special programs. <p>Verify that the master plan is approved by the Division Commander. (6)(15)</p> <p>Verify that master plans that no longer serve their purpose are updated as soon as possible. (6)(15)</p> <p>...</p> |

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**COMPLIANCE CATEGORY:
NATURAL RESOURCES MANAGEMENT
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>5-5. Water resources projects are required to develop and maintain a project OMP (ER 1130-2-400, para 6, para 9 through 11, and Appendix B).</p> <p>...</p> | <p>Verify that an OMP has been developed in coordination with the planning, real estate, and safety elements of the project. (6)(15)</p> <p>Verify that the OMP addresses all operational projects in the master plan. (6)(15)</p> <p>Verify that the OMP contains a section titled <i>Natural Resources Management</i> that addresses: (6)(15)</p> <ul style="list-style-type: none"> - long-term objectives of resource management - compartment descriptions: <ul style="list-style-type: none"> - topography (slope, aspect, general soil type, etc.) - aquatic resources (type, temperature, turbidity, etc.) - vegetation (species, size, density, etc.) - fish and wildlife (species) - special considerations or problems (protected habitat, rare and endangered species, pollution, forest fire control) - management objectives - implementation plan for each compartment including: <ul style="list-style-type: none"> - management techniques - 5-yr schedule - annual manpower and equipment needs - annual costs - coordination with other agencies. <p>Verify that the OMP contains a section titled <i>Park Management</i> that includes: (6)(15)</p> <ul style="list-style-type: none"> - safety (employee, contractor, and visitor) - security - visitor assistance - lakeshore management (existing approved plan may be inserted as is) - private exclusive use (existing approved regional plan may be inserted) - outgrants - maintenance - recreation use fee program - interpretation - cultural resources - special programs - cooperation with other agencies - 5-yr program - priority list (of annual programs with personnel and funding requirements). <p>Verify that the OMP has been approved by the Division Commander. (6)(15)</p> <p>Verify that the OMP is updated as required and when funds are available. (6)(15)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>5-6. Personnel should be designated and trained for environmental responsibilities (GMP).</p> <p style="text-align: center;">...</p> <p>LAND MANAGEMENT</p> <p>General</p> <p>5-7. A protective vegetative cover or other measures shall be provided to control dust and erosion damage to land (ER 1130-2-400, para 11(c)(1) and EM 1110-1-400, para 5-4).</p> <p style="text-align: center;">...</p> | <p>Verify that staffing optimizes professionally trained personnel, such as the following, who are needed for technical guidance in planning and executing the Natural Resources Program: (6)(15)(16)</p> <ul style="list-style-type: none"> - agronomist - forester - wildlife manager - landscape architect - soil conservationist - agricultural engineer - horticulturist. <p>Verify that periodic and comprehensive technical instruction and training of personnel is provided. (1)(6)(15)(16)</p> <p style="text-align: center;">...</p> <p>Determine if the facility has been surveyed to locate areas where bare soil is exposed and current or potential erosion requires correction according to a district priority plan. (6)(7)(10)(12)(13)(15)</p> <p>(NOTE: Check shorelines for erosion.)</p> <p>Verify that remedial actions have been initiated. (15)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>5-8. Facilities and areas with potential exposure to wildfire are required to develop a wildfire prevention plan and a wildfire control plan (EM 385-1-1, para 09.K.01 and para 09.K.02).</p> <p style="text-align: center;">...</p> | <p>Verify that the wildfire prevention plan is updated annually and addresses the following: (1)(5)(6)(10)(15)(16)</p> <ul style="list-style-type: none"> - an analysis of wildfire causes and special hazards and risks - proposed measures to reduce fire occurrence and decrease fire damage - procedures for public education and fire prevention sign-posting plan, including procedures for keeping the public informed of the current fire danger rating - provisions for cooperative efforts with all other neighboring fire protection agencies. <p>Verify that the wildfire control plan is updated annually and addresses the following: (1)(5)(6)(10)(15)(16)</p> <ul style="list-style-type: none"> - in-house wildfire control team organization and personnel roster, training and equipment requirements, and notification procedures - listing of cooperative agencies and notification procedures, (including any mutual aid agreements with adjacent fire departments and agencies) - listing of additional available resources for manpower, equipment, supplies, and facilities, and contracting or procurement information - up-to-date map of the protected area, which shows boundaries, roads, and other means of access, heliports, airports, water sources, special hazards, and special fire risks - listing of weather information sources - procedures for public notification - pre-attack plans. <p>Verify that the wildfire control plan is distributed to all key wildfire control officers. (1)(5)(6)(10)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>Floodplains/Wetlands</p> <p>5-9. Floodplains and wetlands should be identified and protected (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify, by reviewing the OMP, that floodplains and wetlands are identified and protected. (6)(13)(15)</p> <p>Verify that activities in floodplains and wetlands are conducted in accordance with the National Permit. (6)(10)(15)</p> <p>Verify that proper permits are obtained for activities in floodplains and wetlands. (6)(10)(15)</p> <p style="text-align: center;">...</p> |

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| <p>Forests</p> <p>5-10. Effective forest management is required to provide for the sustained production of timber and/or be compatible with multiple use resource management objectives (ER 1130-2-400, para 11(l)).</p> <p>...</p> <p>5-11. Emphasis should be placed on the maintenance and restoration of habitat favorable to the production of indigenous fish and wildlife (GMP).</p> <p>...</p> | <p>Determine if a section concerning forest management is included in the OMP and that it stipulates the following: (6)(15)</p> <ul style="list-style-type: none"> - volume inventories are made and kept current - small volume (including firewood) sales are in accordance with regulations: <ul style="list-style-type: none"> - appropriate harvesting and treatment - sustainment of yield - improvement of vegetation conditions - control of pests - improvement of watersheds - improvement of wildlife habitat - natural beauty values are complemented. <p>...</p> <p>Determine if a fish and wildlife plan addresses the management of all indigenous species and is based upon the following: (6)(13)(15)</p> <ul style="list-style-type: none"> - inventory of fish and game species - inventory of endangered, threatened, and other special interest plant or animal species - survey of nongame wildlife other than endangered species. <p>Verify that fishing, hunting, and trapping are authorized and controlled in conformance with Federal and state laws, local regulations, and approved management plans. (6)(15)</p> <p>Verify that the facility has approval documents from proper authorities if any exotic species were introduced. (6)(13)(15)</p> <p>Examine the facility's monitoring and population management for keeping within carrying capacity of project land. (6)(13)(15)</p> <p>...</p> |
| <p>Shorelines</p> <p>5-12. Each Corps project where private shoreline use is allowed will have a Lakeshore Management Plan (ER 1130-2-406, para 4(c)).</p> <p>...</p> | <p>Verify that the Lakeshore Management Plan contains the following: (6)(13)(15)</p> <ul style="list-style-type: none"> - an area allocation map - descriptions of recreational waste management systems and sanitary facilities - a plan for managing the lakeshore. <p>Verify that the plan is reviewed every 5 yr. (6)(13)(15)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>ENDANGERED/ THREATENED SPECIES</p> <p>5-13. Facilities with Federally designated endangered and threatened species must carry out programs for their conservation (50 CFR 402.01(a), 402.10, and 402.12; ER 200-2-2, para 9).</p> <p style="text-align: center;">...</p> <p>5-14. All facilities must review proposed actions and activities to ensure that they are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat (50 CFR 402.01(a) and 40 CFR 1500; ER 200-2-2).</p> <p style="text-align: center;">...</p> <p>EISs/EAs</p> <p>5-15. A facility must produce an EIS if certain conditions exist because of a proposed action (40 CFR 1502.4 and ER 200-2-2, para 6).</p> <p style="text-align: center;">...</p> | <p>Verify that a survey has been done to determine if the facility has any threatened or endangered species and that the results are reflected in the OMP or equivalent management plans. (6)(13)(15)</p> <p>Verify that consultations have been held with the U.S. FWS and state conservation agency. (6)(13)(15)</p> <p>Verify that measures have been initiated to maintain threatened and endangered species by checking records of U.S. FWS consultations/opinions. (6)(13)(15)</p> <p>Verify that action has been taken to comply with U.S. FWS requirements if a jeopardy biological opinion has been given. (6)(13)(15)</p> <p style="text-align: center;">...</p> <p>Verify that the following documents are considered in the review process: (6)(13)(15)</p> <ul style="list-style-type: none"> - 40 CFR 1500-1508, <i>Council on Environmental Quality.</i> - 50 CFR 17, <i>Endangered and Threatened Wildlife and Plants.</i> - 50 CFR 402, <i>Interagency Cooperation-Endangered Species Act 1973, as amended.</i> - 50 CFR 450, <i>Endangered Species Exemption Process: General Provisions.</i> - 50 CFR 451, <i>Endangered Species Exemption Process: Application Procedures.</i> <p style="text-align: center;">...</p> <p>Verify that the facility produces an EIS if any of the following conditions exist because of a proposed action: (6)(13)(15)</p> <ul style="list-style-type: none"> - potential for significant degradation of environmental quality - potential for significant threat or hazard toward public health or safety - public controversy concerning significance or nature of the biophysical environmental impact of an action - potential for significant impact on protected natural or historic sources. <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>5-16. An EA, under certain conditions, may be produced to determine if an EIS is necessary (40 CFR 1508.9 and ER 200-2-2).</p> <p>...</p> | <p>Determine if the EA has been completed and submitted to the USEPA for review before any contract for action is entered into or action is begun. (6)(13)(15)</p> <p>Verify that EAs include the following information (under the discretion of the Director): (6)(13)(15)</p> <ul style="list-style-type: none"> - the results of an onsite inspection of the area affected by the action to determine if listed or proposed species are present or occur seasonally - the views of recognized experts on the species at issue - a review of the literature and other information - an analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies - an analysis of alternate actions considered by the facility for the proposed action. <p>...</p> |
| <p>5-17. All EAs must prompt either the preparing of an FNSI or an EIS (ER 200-2-2, para 10(a)).</p> <p>...</p> | <p>Determine if EAs prompt either the preparation of an FNSI or an EIS. (6)(13)(15)</p> <p>...</p> |
| <p>5-18. FNSIs, which describe why an action does not have significant effect on the human environment and why an EIS is not necessary, must meet certain requirements (40 CFR 1508.13 and ER 200-2-2, para 11).</p> <p>...</p> | <p>Determine that FNSIs include the following information: (6)(13)(15)</p> <ul style="list-style-type: none"> - the name of the action - a brief description of the action (including any alternatives considered) - a short discussion of anticipated environmental effects - the conclusions that have led to the FNSI - the date of approval and the EPC chairperson's signature. <p>...</p> |

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| <p>5-19. If an EIS must be prepared, the facility must follow the directions set out in 32 CFR 989.12 and supplemented by ER 200-2-2 for preparing and processing an EIS (40 CFR 1502.10 through 1502.18 and 1503.4(i); ER 200-2-2, para 12 and para 13).</p> | <p>Determine if an NOI of the proposed action is published in the FR and made available to the media in the areas potentially affected by the proposed action. (5)(6)(13)(15)</p> <p>Verify that after the NOI has been published, <i>scoping</i> procedures have begun to determine the relative significance of issues and to what depth they must be addressed in the EIS. (5)(6)(13)(15)</p> <p>Verify that a preliminary draft, prepared from the <i>scoping</i> procedure, has the following format: (5)(6)(13)(15)</p> <ul style="list-style-type: none"> - cover sheet: title of submitting agency; title of proposed action; location of proposed action; name, address, and phone number of further information; designation of the statement as a draft, final, draft supplement, or final supplement; a one paragraph abstract of the statement, and the date by which comments must be received - summary: must adequately summarize the statement, stressing major conclusions, areas of controversy, and issues to be resolved (not more than 15 pages) - purpose and need: briefly specifying the underlying purpose and need to which the facility is responding in proposing the alternatives, including the proposed action - alternatives including the proposed action: explore and objectively evaluate all reasonable alternatives, identify preferred alternative and explain reasoning - affected environment: description of the area(s) to be affected or created by the alternatives under considerations - environmental consequences: discussion of direct effects and their significance, indirect effects and their significance, possible conflicts between the proposed action and the objectives of the NEPA, and environmental effects of alternatives - list of preparers: names and qualifications of people primarily responsible for preparing the EIS or background papers - list of agencies - index - appendix: material prepared in coordination with the EIS, normally analytic and relevant to discussions being made. <p>Verify that the preliminary draft EIS is then edited and distributed in the proper manner: (5)(6)(13)(15)</p> <ul style="list-style-type: none"> - draft copies of the EIS are distributed among the proper Federal agencies and printed in the FR - a public review period must be allowed to provide for public and specialist objections and comments - responses to comments must be incorporated in the final EIS by either modifying the text or providing a written explanation in the comment section. <p>Verify that a final EIS is then prepared from this final preliminary draft EIS and that mitigation and implementation are started. (5)(6)(13)(15)</p> |

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Section 6

Pesticide Management

SECTION 6

PESTICIDE MANAGEMENT

A. Applicability

This section applies to any U.S. Army Corps of Engineers (USACE) Civil Works project, facilities, and activities which use, store, or handle pesticides. Pesticides are regulated on the Federal level by the U.S. Environmental Protection Agency (USEPA), on the state level, and by specific USACE regulations. This section integrates the requirements of these regulations into a single document that will normally apply to any facility that handles pesticides.

B. Federal Legislation

- *The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)*, as amended. This Act, Public Law (PL) 92-516 (7 U.S. Code (USC) 136 et seq.) requires the registration of new pesticides and, when pesticides are reregistered, requires that they will not present any unreasonable risks to human health or the environment if used according to label directions. *FIFRA* regulations apply to people who manufacture, market, formulate, distribute, use, or dispose of pesticides and pesticide containers.
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*. This EO, of 13 October 1978, requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for ensuring that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements and for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency provide sufficient funds for environmental compliance in its budget.

C. State/ Local Requirements

- State pesticide regulatory programs are to be at least as stringent as the *FIFRA*. State and local programs typically contain regulations that are tailored to an industry or activity that is prevalent or particularly sensitive in a state. State and local pesticide regulations in many cases provide more stringent standards or specifically identify a requirement that may be qualitatively regulated under the Federal program.

State and local pesticide programs generally include regulations that address the following topics:

1. restrictions or requirements for the sale, distribution, or use of selected pesticides
2. disposal requirements for excess pesticides and pesticide wastes such as pesticide containers
3. restrictions on the control of specific animal or insect species
4. specifications for bulk pesticide storage tanks, storage facilities
5. operational requirements for selected application methods
6. recordkeeping and applicator certification requirements.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations.

- ER 1130-2-413, *Pest Control Program for Civil Works Projects*. This regulation sets forth policy and responsibilities and prescribes the procedures for the operation of a pest management program at Corps Civil Works projects. This regulation establishes the Corp's policy to perform integrated pest management in a manner that provides for the safety of the environment, the public, and the pesticide applicator. The regulation also provides for the training and/or certification of personnel in proper and safe methods of applying, storing, and disposing of pesticides.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.
- Supplemental information can be found in Technical Information Memoranda (TIM), published by the Armed Forces Pest Management Board, which provide specific criteria and procedures for the operation of a pest management program. The following TIM are applicable:

| | |
|------------|--|
| TIM No. 14 | <i>Protective Equipment for Pest Control Personnel</i> |
| TIM No. 15 | <i>Pesticide Spill Prevention and Management</i> |
| TIM No. 17 | <i>Pest Control Facilities</i> |
| TIM No. 18 | <i>Installation Pest Management Program Guide</i> |
| TIM No. 21 | <i>Pesticide Disposal Guide for Pest Control Shops</i> |

E. Key Compliance Requirements

- **Pest Management Program (PMP)** - Each District is required to implement a PMP with a designated, trained, single point-of-contact (POC) who controls the District pest control (ER 1130-2-413, para 6(a)(2)).
- **Pesticide Control Plan** - Field offices are required annually to prepare a Pesticide Control Plan that is submitted to the District office (ER 1130-2-413, para 6(b)).
- **Pesticide Application** - Application of general use pesticides must be conducted by a person trained and/or certified in the application of pesticides. People applying restricted use pesticides must be certified to apply restricted use pesticides. Health monitoring must be provided for government personnel applying pesticides other than bug bombs, space sprays, and no-pest strips. The application of pesticides must not jeopardize the existence of threatened or endangered species. Records of each application will be kept (40 CFR 171.9, 50 CFR 402; ER 1130-2-412, para 6(a) and ER 1130-2-413, para 2(d), para 6(a), para 7(b), and para 8(d)).
- **Pesticide Storage, Mixing, and Preparation Facilities** - Pesticide storage, mixing, and preparation facilities must provide facilities and procedures to ensure safety of personnel, including proper ventilation and use of appropriate safety equipment. A spill containment system constructed of impervious materials is required to provide containment for pesticide storage, mixing, preparation and management areas. Storage facilities for pesticides are required to have ventilation at a rate of 10 air changes per hour, separate drainage systems, and fire exits. Pesticide storage areas must be inspected quarterly by certified application personnel and a safety and fire prevention officer (29 CFR 1910.133 and ER 1130-2-413, para 9 and Appendix D).
- **Highly Toxic Pesticide Storage and Use** - Storage facilities for pesticides and excess pesticides classed as highly toxic or moderately toxic that are labeled DANGER, POISON, or with the skull and crossbones symbol, must meet specific structural, operational, and storage requirements. These include pesticides being kept in a dry, separate room with fire protection which is not near food or feed, and in containers in good condition with plainly visible labels. Pest management programs that use pesticides classed as highly or moderately toxic must have decontamination facilities, provide facilities and procedures to ensure the safety of personnel, post signs and safety procedures, and notify local fire departments, hospitals, public health officials, and police departments, in writing, in the event of a fire, that pesticides are being stored (ER 1130-2-413, para 9 and Appendix D).

- **Pesticide Disposal** - Facilities are required to dispose of any pesticide, pesticide container, or pesticide residue in a manner consistent with labeling, not including open dumping or burning. Organic pesticides other than organic mercury, lead, cadmium and arsenic compounds, must be disposed of according to specific procedures; options include incineration at an incinerator that meets air quality standards for gaseous emissions. Metallo-organic pesticides, except organic mercury, lead, cadmium or arsenic compounds, must be disposed of according to specific procedures, including appropriate treatment to recover heavy metals, and the use of an approved incinerator or specially designated landfill for disposal. Containers must be disposed of according to their classification as either a Group I, Group II or Group III container. Pesticide residues and rinse liquids must be added to spray mixtures or disposed of according to their pesticide type (40 CFR 165.7 and ER 1130-2-413, para 10(b)).

F. Key Compliance Definitions

These definitions were obtained from Federal regulations and ERs previously cited in this section.

- **Acute LD₅₀** - a statistically derived estimate of the concentration of a substance that would cause 50 percent mortality to the test population under specified conditions (40 CFR 152.3).
- **Bug Bombs and Space Sprays** - includes all general use insecticides that are packaged by the manufacturer in aerosol containers of small quantities (approximately 16 oz [497.66 g] per container), and are available for over-the-counter purchase by any person without regard to applicator certification status (ER 1130-2-413, Appendix A).
- **Caution** - the human hazard signal word required on the front panel of a pesticide container as determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category III or IV must bear on the front panel the signal word CAUTION (see *Toxicity Category*) (40 CFR 156.10(h)).
- **Commercial Applicator** - a certified applicator, other than a private applicator, who uses or supervises the use of any pesticide, for any purpose, on any property, or who performs other pest control-related activities (40 CFR 171.2).
- **Crisis Exemption** - utilized in an emergency condition when the time from discovery of the emergency to the time when the pesticide use is needed is insufficient to allow for the authorization of a specific *Quarantine Exemption* or *Public Health Exemption* (40 CFR 166.2).

- *Danger* - the human hazard signal word required on the front panel of a pesticide container as determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category I must bear on the front panel the signal word DANGER (see *Toxicity Category*) (40 CFR 156.10(h)).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Group I Containers* - combustible containers which formerly contained organic or metallo-organic pesticides, except for organic mercury, lead, cadmium, or arsenic compounds, and should be disposed of in a pesticide incinerator or buried in a specially designated landfill, in accordance with 40 CFR 165.8(a), except for small quantities of such containers, which may be burned in open fields by the pesticide user when such open burning is permitted by state and local regulations, or buried singly by the user in open fields with due regard for protection of surface and subsurface water (40 CFR 165.8).
- *Group II Containers* - noncombustible containers which formerly contained organic or metallo-organic pesticides, except for organic mercury, lead, cadmium, or arsenic compounds, and should first be triple-rinsed. Containers in good condition may then be returned to the pesticide manufacturer or formulator, or to the drum reconditioner for reuse with the same chemical class of pesticide previously contained, providing such reuse is legal under current applicable U.S. Department of Transportation (DOT) regulations, including those set forth in 49 CFR 173.28. Other rinsed metal containers should be punctured to facilitate drainage prior to transport to a facility for recycling as a scrap metal or for disposal. All rinsed containers may be crushed and disposed of by burial in a sanitary landfill, in conformance with state and local standards, or buried in the field by the pesticide user. Unrinsed containers should be disposed of in a specially designated landfill or incinerated in a pesticide incinerator.
- *Group III Containers* - containers (both combustible and noncombustible) which formerly contained organic mercury, lead, cadmium, arsenic, or inorganic pesticides, and that have been triple-rinsed and punctured to facilitate drainage, and which must be disposed of in a sanitary landfill. Such containers that are not rinsed should be encapsulated and buried in a specially designated landfill.
- *Imminent Hazard* - a situation that exists when the continued use of a pesticide during the time required for cancellation proceedings would likely result in unreasonable adverse effects on the environment or will involve unreasonable hazard to the survival of a species declared endangered by the Secretary of the Interior (SOI) under PL 91-135 (40 CFR 165.1).

- *Pesticide* - any substance, or mixture of substances, intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or disinfectant and further categorized into the following (40 CFR 165.1):
 1. *Excess pesticides* - pesticides that cannot be legally sold pursuant to the *FIFRA* or that are to be discarded
 2. *Organic pesticides* - carbon-containing substances used as pesticides, excluding metallo-organic compounds
 3. *Inorganic pesticides* - noncarbon-containing substances used as pesticides
 4. *Metallo-organic pesticides* - a class of organic pesticides containing one or more metal or metalloid atoms in the structure.
- *Pesticide Product* - a pesticide in a particular form (including composition, packaging, and labeling) in which the pesticide is, or is intended to be, distributed or sold. This includes any physical apparatus used to deliver or apply the pesticide if distributed or sold with the pesticide (40 CFR 152.3).
- *Public Health Exemption* - authorized in an emergency condition to control a pest that will cause a significant risk to human health (40 CFR 166.2).
- *Quarantine Exemption* - authorized in an emergency condition to control the introduction or spread of any pest new to or not therefore known to be widely prevalent or distributed within and throughout the United States and its territories (40 CFR 166.2).
- *Restricted Use Pesticides* - pesticides designated for restricted use under the provisions of Section 3(d)(1)(c) of the *FIFRA* (40 CFR 171.2).
- *Specific Exemption* - this exemption may be authorized in an emergency condition to avert (40 CFR 166.2):
 1. a significant economic loss
 2. a significant risk to endangered species, threatened species, beneficial organisms, or the environment.
- *Toxicity Category* - serves as the basis for required warnings and precautionary statements for pesticides. The category is assigned on the basis of the highest hazard shown in the table listed in 40 CFR 156.10 (40 CFR 156.10(h)).
- *Warning* - the human hazard signal word required on the front panel of a pesticide container as determined by the Toxicity Category of the pesticide. All pesticide products meeting the criteria of Toxicity Category II shall bear on the front panel the signal word WARNING (see *Toxicity Category*) (40 CFR 156.10(h)).

PESTICIDE MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT PERSONS OR GROUPS:(a) |
|---|---------------------------------|----------------------------------|
| All Facilities | 6-1 through 6-7 | (1)(2)(5)(6)(8)(13)(15)(16)(17) |
| Pesticide Application | 6-8 through 6-14 | (5)(6)(8)(10)(13)(15)(16)(17) |
| Pesticide Storage/Mixing/ Preparation Facilities | 6-15 through 6-22 | (4)(5)(6)(8)(10)(15)(16)(17) |
| Highly/Moderately Toxic Pesticides | 6-23 through 6-30 | (4)(5)(6)(8)(10)(15)(16)(17) |
| Pesticide Disposal | 6-31 through 6-36 | (5)(6)(15)(16)(17) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the facility; RMA - Requires Management Action; C - In Compliance

PESTICIDE MANAGEMENT

Records to Review

- Records of pesticides purchased by the facility (purchase orders, inventory)
- Pesticide application records
- Description of the facility's pest control program
- Certification status of pesticide applicators
- Pesticide disposal manifests
- Contract files
- Any emergency exemption granted to the Federal agency by the USEPA

Physical Features to Inspect

- Personnel protection equipment
- Pesticide application equipment
- Pesticide storage areas, including storage containers

People to Interview

- Natural Resources Manager (Division, District)
- Engineering
- Operations (Division, District)
- Environmental Compliance Coordinator (ECC)
- Safety and Occupational Health Office
- Planning
- Project Resource Manager
- Facility Managers
- Lab Manager

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. The chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 6-1 through 6-6 | 6-1 through 6-6 |
| 6-7 | 6-8 and 6-9 |
| 6-8 and 6-9 | 6-10 and 6-11 |
| 6-10 | 6-7 |
| 6-11 and 6-12 | 6-12 and 6-13 |
| 6-13 | 6-15 |
| 6-14 | 6-14 |
| 6-15 through 6-19 | 6-16 through 6-20 |
| 6-20 and 6-21 | 6-23 and 6-24 |
| 6-22 | 6-21 |
| 6-23 through 6-25 | 6-25 through 6-27 |
| no match | 6-28 |
| 6-26 and 6-27 | 6-29 and 6-30 |
| 6-28 | 6-22 |
| no match | 6-31 |
| 6-29 through 6-33 | 6-32 through 6-36 |

| | | | |
|-------------------------|--|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action, C - In Compliance

**COMPLIANCE CATEGORY:
PESTICIDE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>ALL FACILITIES</p> <p>6-1. Determine actions or changes since previous environmental review of pesticide management (GMP).</p> <p>...</p> <p>6-2. The facility should have access to a current file of applicable Federal, Corps of Engineers', and state pesticide regulations, as well as appropriate technical information manuals (GMP).</p> <p>...</p> <p>6-3. Facilities are required to comply with state and local pesticide regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> <p>...</p> | <p>Determine, by reviewing a copy of the previous environmental review, if noncompliance issues were resolved. (5)(6)(8)(15)</p> <p>(NOTE: The term <i>pesticides</i> in this protocol refers to insecticides, rodenticides, herbicides, and other pest control chemicals (see the definition in the introduction).)</p> <p>...</p> <p>Verify that the following documents are maintained and kept current at the facility or district or division office: (1)(2)(5)(6)(8)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance With Pollution Control Standards</i>. - 29 CFR 1910, <i>Occupational Safety and Health Standards</i>. - 40 CFR 152, <i>Pesticide Registration and Classification Procedures</i>. - 40 CFR 165, <i>Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticides and Pesticides Containers</i>. - 40 CFR 166, <i>Exemption of Federal and State Agencies for Use of Pesticides Under Emergency Conditions</i>. - 40 CFR 171, <i>Certification of Pesticide Applicators</i>. - 50 CFR 402, <i>Interagency Cooperation - Endangered Species Act of 1973, as amended</i>. - ER 1130-2-412, <i>Aquatic Pest Control Program</i>, 1 September 1984. - ER 1130-2-413, <i>Pest Control Program for Civil Works Projects</i>, 16 August 1989. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - TIM No. 17, <i>Pest Control Facilities</i>. - Applicable state and local pesticide regulations. <p>...</p> <p>Verify that the facility is complying with state and local requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - applicator certification - restricted use pesticides - application procedures - emergency application of pesticides because of public health threats - banned pesticides - predator control - disposal methods.) <p>...</p> |

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| COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>6-4. All pesticides present on the facility are required to be registered or exempted from the registration requirements (40 CFR 152.15 through 152.30).</p> | <p>Verify that pesticide products at the facility are registered, unless the facility or product is considered exempt, such as the following: (5)(15)(16)</p> <ul style="list-style-type: none"> - certain biological control agents - certain human drugs - treated articles or substances, such as paint treated with a pesticide - pheromones and pheromone traps - preservatives for biological specimens - vitamin hormone products - pesticides transferred between registered establishments operated by the same producer - pesticides distributed or sold under an experimental use permit - pesticides transferred solely for export - pesticides distributed or sold under an emergency exemption. |
| <p>6-5. All facilities are required to comply with pesticide use requirements, unless an emergency exemption has been granted by the USEPA (40 CFR 166.1, 166.2, 166.20, 166.28, 166.32, 166.45, and 166.50).</p> | <p>Verify that pesticide use requirements are followed unless one or more of the following emergency conditions exist: (5)(15)(16)</p> <ul style="list-style-type: none"> - <i>Specific Exemptions</i> may be authorized to avoid conditions of: <ul style="list-style-type: none"> - significant economic loss - significant risk to threatened or endangered species - significant risk to beneficial organisms - significant risk to the environment - <i>Quarantine Exemptions</i> may be authorized to control the introduction or spread of any pest new to or unknown to be widespread throughout the United States and its territories - <i>Public Health Exemptions</i> may be authorized to control a pest that imposes significant risk to human health - <i>Crisis Exemptions</i> may be utilized when the time constraint between discovery and implementation of pesticide use will not allow the issuing of a <i>Specific, Quarantine, or Public Health Exemption</i>. <p>Verify that applications for exemptions are submitted to the Regional Administrator in writing and include: (5)(15)(16)</p> <ul style="list-style-type: none"> - a description of the pesticide - the proposed use - any alternative means of control and why those means are not feasible. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>6-5. (continued)</p> <p>...</p> <p>6-6. Each district will implement a Pest Management Program (ER 1130-2-413, para 6(a)(2)).</p> <p>...</p> <p>6-7. Field offices are required to prepare and submit an annual Pesticide Control Plan (ER 1130-2-413, para 6(b))</p> <p>...</p> | <p>Verify that exemptions are issued for a specific length of time, as follows: (5)(15)(16)</p> <ul style="list-style-type: none"> - no longer than 1 yr for <i>specific</i> and <i>public health exemptions</i> - no longer than 3 yr for a <i>quarantine</i> permit (may be renewed) - no longer than 15 days (unless an application for another type of exemption has been submitted) for <i>Crisis Exemptions</i>. <p>Verify that any unexpected adverse affects from the use of a pesticide under exemption conditions are reported to the USEPA. (5)(15)(16)</p> <p>Verify that a report summarizing the use of a pesticide under an exemption was submitted within 6 mo after the expiration of the exemption to the agency (3 mo for a <i>Crisis Exemption</i>). (5)(15)(16)</p> <p>...</p> <p>Verify that the District Commander has designated a trained, single POC for management of the district pest control program. (5)(6)(15)(16)(17)</p> <p>Verify that the district office maintains a current listing of suspended, cancelled, and restricted use pesticide. (5)(6)(15)(16)(17)</p> <p>...</p> <p>Verify that the annual projected Pest Control Plan is completed and forwarded to the District Office by 16 December of each year. (5)(6)(15)(16)(17)</p> <p>Verify that the annual Actual Pest Control Plan (usage plan) is provided to the district POC by 30 January of each year. (5)(6)(15)(16)(17)</p> <p>Verify that proposed and actual pesticide usage have been submitted to the POC. (5)(6)(10)(16)</p> <p>...</p> |
| <p>PESTICIDE APPLICATION</p> <p>6-8. Application of general use pesticides are required to be conducted by a person who is trained and/or certified in the application of pesticides (ER 1130-2-412, para 6(a) and ER 1130-2-413, para 7(c)).</p> <p>...</p> | <p>Verify that applicators are trained and/or certified in accordance with ER 1130-2-413 by checking the pest management program. (5)(6)(15)(16)(17)</p> <p>(NOTE: This also applies to aquatic plant control personnel who apply herbicides.)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>6-9. People who apply restricted use pesticides must be certified to apply restricted use pesticides (40 CFR 171.9).</p> <p>...</p> <p>6-10. Health monitoring must be provided for government personnel who apply pesticides other than bug bombs, space sprays, and no-pest strips (ER 1130-2-413, para 7(b) and Appendix D).</p> <p>...</p> <p>6-11. Public safety must be ensured when applying or using pesticides (GMP).</p> <p>...</p> <p>6-12. Records are required to be maintained of each application of a pesticide, whether performed by hired labor or contract, and retained at the project office (ER 1130-2-413, para 8(d)).</p> <p>...</p> | <p>Determine if the facility uses restricted use pesticides (see Appendix 6-1 for a list of restricted use pesticides). (5)(6)(15)(16)(17)</p> <p>Verify that applicators are certified. (5)(6)(15)(16)(17)</p> <p>Verify that training recertification is scheduled and performed as required to maintain certification and that certification is relevant to the pest management activities undertaken. (5)(6)(15)(16)(17)</p> <p>Verify that if contractors are used for pest management, they are certified. (5)(6)(15)(16)(17)</p> <p>...</p> <p>Verify that all pest management personnel have received baseline physical examinations within 30 days of starting pest management work, in accordance with ER 1130-2-413. (5)(6)(8)(15)(16)(17)</p> <p>Verify that pest management personnel receive additional physical examinations once each year. (5)(6)(8)(15)(16)(17)</p> <p>Verify that cholinesterase tests are given to pest management personnel working regularly with pesticides that contain organophosphates or N-alkyl-carbamates. (5)(6)(8)(15)(16)(17)</p> <p>...</p> <p>Verify elimination of hazardous exposure to the general public by checking for the following: (15)(16)(17)</p> <ul style="list-style-type: none"> - posting of appropriate signs in treatment areas - scheduling for low-use periods or restricted usage for a number of days - following of water use restrictions and reentry times as specified on pesticide labels. <p>...</p> <p>Verify that records are kept on file for a minimum of 2 yr. (5)(6)(10)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>6-13. Facilities must ensure that the use of pesticides does not jeopardize the existence of threatened or endangered species (50 CFR 402 and ER 1130-2-413, para 2(d)).</p> <p>...</p> <p>6-14. Spills of pesticides will be contained and reported in accordance with the district's Oil and Hazardous Materials Spill Plan (ER 1130-2-413, para 11).</p> <p>...</p> | <p>Determine if surveys have been conducted to identify the presence of threatened or endangered species in areas where pesticides are used. (5)(6)(13)(15)(16)</p> <p>Determine what measures are taken to ensure that threatened or endangered species are not impacted. (5)(6)(13)(15)(16)</p> <p>Verify that applications are made according to label instructions regarding the protection of endangered species. (5)(6)(15)(16)</p> <p>(NOTE: Refer to the section on endangered species in <i>Natural Resources Management</i>.)</p> <p>...</p> <p>Determine if the facility has had any spills of pesticides. (5)(15)(16)</p> <p>Verify that pesticide spills are addressed in the district's Oil and Hazardous Materials Spill Plan. (5)(15)(16)</p> <p>...</p> |

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|--|---|
| <p>PESTICIDE STORAGE/ MIXING/ PREPARATION FACILITIES</p> <p>6-15. Facilities are required to store any pesticide, pesticide container, or pesticide residue according to specific restrictions (40 CFR 165.7).</p> <p align="center">...</p> <p>6-16. Security measures should assure that only authorized persons can access pesticide storage, mixing, and preparation areas (GMP).</p> <p align="center">...</p> <p>6-17. Pesticide storage, mixing, and preparation facilities must provide facilities and procedures to ensure safety of personnel (29 CFR 1910.133).</p> <p align="center">...</p> | <p>(NOTE: Storage areas must also meet the general requirements for the storage of hazardous materials found in 29 CFR 1910.106, see Section 3, <i>Hazardous Materials Management</i>.)</p> <p>Verify that pesticides, pesticide containers, and/or pesticide residues are stored such that storage is not inconsistent with labeling. (5)(6)(15)(16)</p> <p align="center">...</p> <p>Verify that a climb-resistant fence completely encloses facility. (5)(6)(15)(16)(17)</p> <p>Verify that vehicles used to transport pesticides have locking compartments. (5)(6)(15)(16)(17)</p> <p align="center">...</p> <p>Determine if a ventilation system is specifically provided for all indoor pesticide mixing/preparation areas. (5)(6)(8)(15)(16)(17)</p> <p>Verify that an emergency deluge shower and eyewash station are located to provide immediate access to all personnel performing mixing. (5)(6)(8)(15)(16)(17)</p> <p>Verify that personal protective clothing and equipment are provided and used by pest management personnel. The following equipment depends upon magnitude and type of operations: (5)(6)(8)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - respirators - masks - gloves - safety shoes - coveralls - specialized personal protective equipment for fumigation. <p>Verify that operations include health and safety procedures emphasizing good work habits, reduction or elimination of hazards, and use of personal protective equipment. (5)(6)(8)(13)(15)(16)(17)</p> <p align="center">...</p> |

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| <p>6-18. A spill containment system constructed of impervious materials is required to provide containment for pesticide storage, mixing, preparation, and management areas (ER 1130-2-413 and TIM No. 17).</p> <p style="text-align: center;">...</p> | <p>Verify that there is curbing or another form of impervious containment around the required areas. (5)(6)(15)(16)(17)</p> <p>Determine if there are drains and cracks in floors. (5)(6)(15)(16)</p> <p>Verify that spill response procedures are written and understood by the staff. (5)(6)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>6-19. Storage facilities for pesticides are required to have ventilation at a rate of 10 air changes per hour (ER 1130-2-413, Appendix D, para d-10e).</p> <p style="text-align: center;">...</p> | <p>Verify that storage facilities for pesticides have ventilation at a rate of 10 air changes per hour. (5)(6)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>6-20. Storage facilities for pesticides are required to have separate drainage systems and fire extinguishers (ER 1130-2-413, Appendix D, para D-10 (d through e)).</p> <p style="text-align: center;">...</p> | <p>Verify that fire extinguishers are installed near the door of pesticide storage rooms. (5)(6)(15)(16)</p> <p>Verify that the drainage systems are separated from the regular systems. (5)(6)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>6-21. Pesticide storage areas must be inspected quarterly by certified applicator personnel and a safety and fire prevention officer (ER 1130-2-413, para 9).</p> <p style="text-align: center;">...</p> | <p>Verify that pesticide storage areas are inspected quarterly. (5)(6)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>6-22. Mixing/formulation areas are required to meet specific standards (ER 1130-2-413, Appendix D, para D-10).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has any mixing/formulation areas. (5)(6)(15)(16)</p> <p>Verify that enclosed mixing areas have a local exhaust ventilation with a minimum face velocity of 100 linear feet [30.48 linear meters] per minute to control toxic vapors. (5)(6)(15)(16)</p> <p>Verify that drainage systems are separate from the regular system. (5)(6)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>HIGHLY/ MODERATELY TOXIC PESTICIDES</p> <p>6-23. Storage facilities for pesticides and excess pesticides that are classed as highly toxic or moderately toxic, and required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol, must meet specific structural requirements (ER 1130-2-413, para 9).</p> <p align="center">...</p> <p>6-24. The storage of pesticides and excess pesticides that are classed as highly toxic or moderately toxic, and required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol, must meet specific operational requirements (ER 1130-2-413, para 9 and Appendix D, para D-10d).</p> <p align="center">...</p> | <p>Verify that storage is in a dry, separate room, building, or covered area where fire protection is provided. (5)(6)(15)(16)</p> <p>Verify that, when relevant and practicable, the entire storage facility is secured by a climb-proof fence and the doors and gates are kept locked. (5)(6)(15)(16)</p> <p>Verify that pesticides are not stored near food or feed. (5)(6)(15)(16)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(c)(1).)</p> <p align="center">...</p> <p>Verify that pesticide containers are stored with labels plainly visible. (5)(6)(15)(16)</p> <p>Verify that all containers are in good condition. (5)(6)(15)(16)</p> <p>Verify that the lids and bungs on metal or rigid plastic containers are tight. (5)(6)(15)(16)</p> <p>Verify that the pesticides are segregated. (5)(6)(15)(16)</p> <p>Verify that a complete inventory is kept indicating the number and identity of containers in a storage unit. (5)(6)(15)(16)</p> <p>Verify that containers are regularly inspected for corrosion and leaks and that absorbent material is available for spill cleanup. (5)(6)(15)(16)</p> <p>Verify that diluted oil-based pesticides are stored separately from other materials because they are flammable. (5)(6)(15)(16)</p> <p>Verify that excess pesticides and containers are segregated. (5)(6)(15)(16)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(d).)</p> <p align="center">...</p> |

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| <p>6-25. Pest management programs using pesticides that are classed as highly or moderately toxic, and required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol on the label, must have decontamination facilities (ER 1130-2-413, para 9).</p> | <p>Determine if facilities are available for personnel decontamination and where such facilities are located. (5)(6)(15)(16)(17)</p> <p>Determine if facilities are available for the decontamination of equipment, including vehicles that have been used for pesticide applications. (5)(6)(15)(16)</p> <p>Verify that berms, curbing, surfaces, and catchment drains, used to impound washwater resulting from decontamination, are impervious. (5)(6)(15)(16)</p> <p>Verify that drains impound washwater and do not connect to sanitary sewer or stormwater systems. (5)(6)(15)(16)</p> <p>Verify that the procedure for disposal of washwater resulting from decontamination activities is the same as for excess pesticides. (5)(6)(15)(16)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(c)(4).)</p> |
| <p>6-26. Storage of pesticides and excess pesticides that are classed as highly or moderately toxic, and required to be labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol, must meet specific requirements (ER 1130-2-413, para 9).</p> | <p>Verify that the site location, where possible, is in an area where flooding is unlikely and where hydrogeologic conditions prevent contamination of any water system by runoff or percolation by: (5)(6)(15)(16)(17)</p> <ul style="list-style-type: none"> - inspecting the area surrounding the facilities and determining proximity to surface water - noting the location relative to floodplains, depth of groundwater, general soil types, and typical permeabilities - verifying that the spill management system exists. <p>Verify that an environmental monitoring system exists for facilities that do not have spill management system when the facility handles large quantities of pesticides and is located near a sensitive environmental receptor. The reviewer should: (5)(6)(15)(16)(17)</p> <ul style="list-style-type: none"> - note approximate quantity of pesticides and location of sensitive environmental receptors - check if groundwater, surface water, or air monitoring programs exist to determine any effects caused by pesticide storage, mixing, and preparation - inspect facility operations and layout to determine if operations are likely to allow runoff of water that may have contacted pesticides. <p>Verify that, when needed, drainage from the site is contained by natural or artificial barriers or dikes. (5)(6)(15)(16)(17)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(b).)</p> |

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|---|--|
| <p>6-27. Facilities that store/use pesticides that are classed as highly or moderately toxic, and required to bear the signal words DANGER, POISON, WARNING, or the skull and crossbones symbol, must provide facilities and procedures to ensure the safety of personnel (ER 1130-2-413, para 9).</p> <p align="center">...</p> | <p>Verify that no food consumption, drinking, smoking, or tobacco use is undertaken in any area where pesticides are present. (5)(6)(8)(15)(16)(17)</p> <p>Verify that the following practices are performed in pest management operations: (5)(6)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - people handling pesticides keep hands away from mouths and eyes and wear rubber gloves during all pesticide handling - people handling pesticides wash hands immediately upon completion of working with pesticides and always prior to eating, smoking, or using toilet facilities - people handling concentrated pesticides wear protective clothing that is removed if found to be contaminated - a stock of protective clothing is available - self-contained breathing apparatus and impermeable suits are available for handling pesticides that can be absorbed through the skin - inspections are made once a month to determine if any pesticide containers are leaking - pesticide containers are inspected for leakage prior to handling - unauthorized people are not allowed in storage areas. <p>Verify that the following accident prevention measures are taken: (5)(6)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - all containers are inspected for leaks prior to handling - containers are not mishandled - unauthorized persons are not permitted in the storage area - pesticides are not stored next to food or feed or other articles intended for human consumption. <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(e) and 165.10(f).)</p> <p align="center">...</p> |
| <p>6-28. Mobile equipment must not be removed from the storage site without being decontaminated (ER 1130-2-413, para 9).</p> <p align="center">...</p> | <p>Verify that mobile equipment is inspected prior to departure.</p> <p>Verify that mobile equipment that is found to be contaminated is decontaminated.</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(c)(2) and 165.10(e)(1)(v).)</p> <p align="center">...</p> |

DIVISION: (1) Natural Resources Management (2) Engineering (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (6) Natural Resource Management (8) Safety and Occupational Health Officer (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
PESTICIDE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>6-29. Pesticide storage facilities and equipment that contain or use pesticides that are classed as highly or moderately toxic, and labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol, must post signs and follow safety procedures (ER 1130-2-413, para 9).</p> | <p>Verify that signs reading DANGER POISON, PESTICIDE STORAGE are placed on or near entries to storage facilities. (5)(6)(8)(15)(16)(17)</p> <p>Verify that safety precautions and accident prevention measures are posted. (5)(6)(8)(15)(16)(17)</p> <p>Verify that an inventory of pesticides is displayed outside the storage facility, identifying all chemicals in storage. (5)(6)(8)(15)(16)(17)</p> <p>Verify that mobile equipment used for pesticide applications is labeled CONTAMINATED WITH PESTICIDES. (5)(6)(8)(15)(16)(17)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(c)(2) through 165.10(c)(3), 165.10(e), and 165.10(g)(2).)</p> |
| <p>6-30. Where large quantities of pesticides classed as highly or moderately toxic, and labeled with DANGER, POISON, WARNING, or the skull and crossbones symbol, are being stored, or other conditions warrant, the local fire department, hospitals, public health officials, and police department must be notified, in writing, that pesticides are being stored (ER 1130-2-413, para 9 and TIM No. 17).</p> | <p>Verify that notification has been submitted and includes a statement of the hazards that pesticides may present during a fire. (4)(5)(6)(8)(10)(15)(16)(17)</p> <p>Verify that a floor plan of the storage facility, indicating the location of the different pesticide classifications, has been submitted to the fire department. (4)(5)(6)(8)(10)(15)(16)(17)</p> <p>Verify that the fire chief has the home telephone numbers of the person(s) responsible for the pesticide storage facility. (4)(5)(6)(8)(10)(15)(16)(17)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.10(g)(1).)</p> |

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**COMPLIANCE CATEGORY:
PESTICIDE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>PESTICIDE DISPOSAL</p> <p>6-31. Facilities must dispose of any pesticide, pesticide container, or pesticide residue according to specific restrictions (40 CFR 165.7).</p> <p>...</p> <p>6-32. Organic pesticides, except for organic mercury, lead, cadmium, and arsenic compounds, must be disposed of according to specific procedures (ER 1130-2-413, para 10(b)).</p> <p>...</p> <p>6-33. Metallo-organic pesticides, except organic mercury, lead, cadmium, or arsenic compounds, are required to be disposed of according to specific procedures (ER 1130-2-413, para 10(b)).</p> <p>...</p> | <p>Verify that pesticides, pesticide containers, and/or pesticide residues are disposed of such that: (5)(6)(15)(16)</p> <ul style="list-style-type: none"> - disposal is not inconsistent with labeling - open dumping of pesticides or pesticide containers is not done - open burning is not done, except when allowed by state and local regulation - water dumping or ocean dumping does not occur. <p>...</p> <p>Determine if the facility uses organic pesticides. (5)(6)(15)(16)(17)</p> <p>Verify that the organic pesticides are disposed of through incineration at an incinerator that meets the air quality standards for gaseous emissions, in a specially designated landfill if incineration is not available, or by another approved method. (5)(6)(15)(16)(17)</p> <p>(NOTE: Municipal solid waste incinerators may be used to incinerate pesticides and pesticide containers if they meet criteria of the state.)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.8 and 165.9.)</p> <p>...</p> <p>Determine if the facility uses metallo-organic pesticides. (5)(6)(15)(16)(17)</p> <p>Verify that metallo-organic pesticides are subjected to an appropriate chemical or physical treatment to recover heavy metals from the hydrocarbon structure prior to disposal. (5)(6)(15)(16)(17)</p> <p>Verify that metallo-organic pesticides are disposed of through incineration at an approved incinerator, in a specially designated landfill, or by another approved method. (5)(6)(15)(16)(17)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.8 and 165.9.)</p> <p>...</p> |

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**COMPLIANCE CATEGORY:
PESTICIDE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>6-34. Organic mercury, lead, cadmium, arsenic, and all inorganic pesticides are required to be disposed of according to specific procedures (ER 1130-2-413, para 10(b)).</p> | <p>Determine if the facility uses organic mercury, lead, cadmium, arsenic, or any inorganic pesticides. (5)(6)(15)(16)(17)</p> <p>Verify that these pesticides are converted to a nonhazardous compound and the heavy metal resources are recovered. (5)(6)(15)(16)(17)</p> <p>Verify that if chemical deactivation facilities are not available, these pesticides are encapsulated and buried in a specially designated landfill and records sufficient to permit location and retrieval are maintained. (5)(6)(15)(16)(17)</p> <p>Determine if an alternate method of disposal has been approved. (5)(6)(15)(16)(17)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.8 and 165.9.)</p> |
| <p>6-35. Containers must be disposed of according to their classification as either a Group I, Group II, or Group III container (ER 1130-2-413, para 10(b)).</p> | <p>Verify that Group I containers are disposed of in an incinerator or buried in a specially designated landfill. (5)(6)(15)(16)(17)</p> <p>(NOTE: Small quantities of Group I containers may be burned in open fields by the user of the pesticide when allowed by the state.)</p> <p>Verify that Group II containers are triple-rinsed. (5)(6)(15)(16)(17)</p> <p>Verify that Group II containers in good condition are returned to the manufacturer, formulator, or drum reconditioner for reuse with the same chemical class of pesticides. (5)(6)(15)(16)(17)</p> <p>Verify that Group II containers that are going to be transported to a facility for recycling as scrap metal or for disposal are punctured. (5)(6)(15)(16)(17)</p> <p>Determine if rinsed Group II containers are crushed and disposed of in a landfill according to state or local requirements. (5)(6)(15)(16)(17)</p> <p>Verify that unrinsed Group II containers are disposed of in a specially designated landfill or incinerated. (5)(6)(15)(16)(17)</p> <p>Verify that Group III containers that are not rinsed are encapsulated and disposed of in a specially designated landfill. (5)(6)(15)(16)(17)</p> <p>(NOTE: Group III containers that are rinsed may be disposed of in a sanitary landfill.)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.8 and 165.9.)</p> |

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| COMPLIANCE CATEGORY: PESTICIDE MANAGEMENT USACE ERGO | |
|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>6-36. Pesticide residues and rinse liquids are required to be added to spray mixtures or disposed of according to their pesticide type (ER 1130-2-413, para 10(b)).</p> | <p>Verify that pesticide residues or rinse liquids are reused. (5)(6)(15)(16)(17)</p> <p>Verify that if pesticide residues or rinse or rinse liquids are not reused, they are disposed of according to their pesticide type. (5)(6)(15)(16)(17)</p> <p>(NOTE: These requirements are based on guidelines found in 40 CFR 165.8 and 165.9.)</p> |

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Appendix 6-1

Restricted Use Pesticides

(40 CFR 152.175)

The following uses of pesticide products containing the active ingredients specified below have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|--------------------|---|---------------------------------------|-----------------------------|--|
| Acrolein | As sole active ingredient. No mixtures registered. | All uses. | Restricted | Inhalation hazard to humans. Residue effects on avian species and aquatic organisms. |
| Acrylonitrile | In combination with carbon tetrachloride. No registrations as the sole active ingredient. | do* | do | Other hazards-accident history of acrylonitrile and carbon tetrachloride products. |
| Aldicarb | As sole active ingredient. | Ornamental uses (indoor and outdoor). | do | Other hazards-accident history. |
| | No mixtures registered. | Agricultural crop uses. | Under further evaluation. | |
| Allyl alcohol | All formulations. | All uses. | Restricted | Acute dermal toxicity. |
| Aluminum phosphide | As sole active ingredient. No mixtures registered. | do | do | Inhalation hazard to humans. |

*do means same as above

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|-------------------|---|---|-----------------------------|----------------------------------|
| Azinphos methyl | All liquids with a concentration greater than 13.5 pct.** | do | do | do |
| | All other formulations. | do | Under further evaluation. | |
| Calcium cyanide | As sole active ingredient. No mixture registered. | do | Restricted | do |
| Carbofuran | All concrete suspensions and wettable powders 40% and greater. | do | do | Acute inhalation toxicity. |
| | All granular formulations. | Rice | Under evaluation. | |
| | All granular and fertilizer formulations. | All uses except rice. | do | |
| Chlorfenvinphos | All concentrate solutions or emulsifiable concentrates 21% and greater. | All uses (domestic and non-domestic). | Restricted | Acute dermal toxicity. |
| Chloropicrin | All formulations greater than 2%. | All uses | Restricted | Acute inhalation toxicity |
| | All formulations. | Rodent control | Restricted | Hazard to non-target organisms. |
| | All formulations 2% and less. | Outdoor uses (other than rodent control). | Unclassified | |

**pct represents percent

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ⁱ | Criteria Influencing Restriction |
|-------------------|--|------------------------------------|-----------------------------|---|
| Clo nitralid | All wettable powders 70% and greater. | All uses. | do | Acute inhalation toxicity. |
| | All granulars and wettable powders. | Molluscide uses. | do | Effects on aquatic organisms. |
| | Pressurized sprays 0.55% and less. | Hospital antiseptics. | Unclassified | |
| Cyclo-heximide | All formulations greater than 4%. | All uses. | Restricted | Acute dermal toxicity. |
| | All formulations 0.027% to 4%. | All uses. | Under evaluation. | |
| | All formulations 0.027% and less. | Domestic uses. | Unclassified | |
| Demeton | 1 pct fertilizer formulation, 1.985 pct granular. | All uses, including domestic uses. | Restricted | Domestic uses: Acute oral toxicity Acute dermal toxicity. Nondomestic outdoor uses. Residue effects on avian and mammalian species. |
| | All granular formulations, emulsifiable concentrates and concentrated solutions. | All uses. | do | Acute dermal toxicity. Residue effects on mammalian and avian species. |
| Dicrotophos | All liquid formulations 8% and greater. | All uses. | Restricted | Acute dermal toxicity; residue effects on avian species (except for tree injections). |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|-------------------|---|--|-----------------------------|----------------------------------|
| Dioxathion | All concentrate solutions or emulsifiable concentrates ² greater than 30%. | All uses | Restricted | Acute dermal toxicity. |
| | Concentrate solutions or emulsifiable concentrates ² 30% and less and wettable powders 25% and less. | Livestock and agricultural uses (nondomestic uses only). | Unclassified | |
| | All solutions ² 3% and greater ² | Domestic | Restricted | do |
| | 2.5% solutions ² with toxaphene and malathion. | All uses. | Under evaluation. | |
| | | | | |
| Disulfoton | All emulsifiable concentrates 65% and greater, all emulsifiable concentrates and concentrate solutions 21% and greater with fensulfothion 43% and greater, all emulsifiable concentrates 32% and greater in combination with 32% fensulfothion and greater. | do | Restricted | do Acute inhalation toxicity. |
| | Non-aqueous solution 95% and greater. | Commercial seed treatment. | Restricted | Acute dermal toxicity. |
| | Granular formulations 10% and greater. | Indoor uses (greenhouse). | do | Acute inhalation toxicity. |
| | | | | |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|-------------------|--|---------------|-----------------------------|---|
| Endrin | All emulsions, dusts, wettable powders, pastes, and granular formulations 2 pct and above. | All uses. | Restricted. | Acute dermal toxicity. Hazard to nontarget organisms. |
| | All concentrations less than 2 pct. | do | do | Hazard to non-target organisms. |
| EPN | All liquid and dry formulations greater than 4%. | All uses. | Restricted | Acute dermal toxicity; acute inhalation toxicity; residue effects on avian species. |
| | | Aquatic uses. | Restricted | Effects on aquatic organisms. |
| Ethoprop | Emulsifiable concentrates 40% and greater. | do | do | Acute dermal toxicity. |
| | All granular and fertilizer formulations. | do | Under evaluation. | |
| Ethyl parathion | All granular and dust formulations greater than 2 pct, fertilizer formulations, wettable powders, emulsifiable concentrates, concentrated suspensions, concentrated solutions. | do | Restricted | Inhalation hazard to humans. Acute dermal toxicity. Residue effects or mammalian, aquatic, avian species. |
| | Smoke fumigants. | do | do | Inhalation hazard to humans. |
| | Dust and granular formulations 2 pct and below. | do | do | Other hazards-accident history. |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|----------------------|---|---------------------------|-----------------------------|----------------------------------|
| Fenamiphos | Emulsifiable concentrates 35% and greater. | do | do | Acute dermal toxicity. |
| Fensulfothion | Concentrate solutions 63% and greater, all emulsifiable concentrates and concentrate solutions 43% and greater with disulfoton 21% and greater, all emulsifiable concentrates 32% and greater in combination with disulfoton 32% and greater. | do | Restricted | do |
| | Granular formulations 10% and greater. | Indoor uses (greenhouse). | do | do |
| Fluoroacetamide/1081 | As sole active ingredient in baits. No mixtures registered. | All uses. | Restricted | Acute oral toxicity. |
| Fonofos | Emulsifiable concentrates 44% and greater. | All uses. | do | Acute dermal toxicity. |
| | Emulsifiable concentrates 12.6% and less with pebulate 50.3% and less. | Tobacco | Unclassified | |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|-------------------|--|---|-----------------------------|--|
| Hydrocyanic acid | As sole active ingredient. No mixtures registered. | do | do | Inhalation hazard to humans. |
| Methamidophos | Liquid formulations 40% and greater. | All uses | Restricted | Acute dermal toxicity; residue effects on avian species. |
| | Dust formulations 2.5% and greater. | All uses | Restricted | Residue effects on avian species. |
| Methidathion | All formulations. | All uses except stock, safflower, and sunflower. | Restricted | Residue effects on avian species. |
| | All formulations. | Nursery stock, safflower, and sunflower | Unclassified | |
| Methomyl | As sole active ingredient in 1 pct to 2.5 baits (except 1 pct fly bait). | Nondomestic outdoor agricultural crops, ornamental and turf. All other registered uses. | Restricted. | Residue effects on mammalian species. |
| | All concentrated solution formulations. | do | do | Other hazards-accident history. |
| | 90 pct wettable powder formulations (not in water soluble bags). | do | do | do |
| | 90 pct wettable powder formulation in water soluble bags. | do | Unclassified | |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|-------------------------|--|---|-----------------------------|---|
| Methomyl (continued) | All granular formulations. | do | do | |
| | 25 pct wettable powder formulations. | do | do | |
| | In 1.24 pct to 2.5 pct dusts as sole active ingredient and in mixtures with fungicides and chlorinated hydrocarbon, inorganic phosphate and biological insecticides. | do | do | |
| | | | | |
| Methyl bromide | All formulations in containers greater than 1.5 lb | All uses. | Restricted | Other hazards-accident history. |
| | Containers with not more than 1.5 lb of methyl bromide with 0.25 pct to chloropicrin as an indicator. | Single applications (nondomestic use) for soil treatment in closed systems. | Unclassified | |
| | Containers with not more than 1.5 lb having no indicator. | All uses. | Restricted | do |
| | | | | |
| Methyl parathion | All dust and granular formulations less than 5 pct. | do | do | Other hazards-accident history. All foliar applications restricted based on residue |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|------------------------------|--|-----------------------------|-----------------------------|---|
| Methyl parathion (continued) | | | | effects on mammalian and avian species. |
| | Microencapsulated. All dust and granular formulations 5 pct and greater and all wettable powders and liquids. | do | do | Residue effects on avian species. Hazard to bees. Acute dermal toxicity. Residue effects on mammalian and avian species. |
| Mevinphos | All emulsifiable concentrates and liquid concentrates. | do | do | do |
| | Psycodid filter fly liquid formulations. | do | do | Acute dermal toxicity. |
| | 2 pct dusts. | do | do | Residue effects on mammalian and avian species. |
| Monocrotophos | Liquid formulations 19% and greater. | do | do | Residue effects on avian species. |
| | Liquid formulations 55% and greater. | do | do | Residue effects on mammalian species. Acute dermal toxicity. Residue effects on avian species. Residue effects on mammalian species. |
| Nicotine (alkaloid) | Liquid and dry formulations 14% and above. | Indoor (greenhouse) | Restricted | Acute inhalation toxicity. |
| | All formulations. | Applications to cranberries | Restricted | Effects on aquatic organisms. |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|--|---|---|-----------------------------|---|
| Nicotine (alkaloid) (Continued) | Liquid and dry formulations 1.5% and less. | All uses (domestic and non-domestic). | Unclassified | |
| Paraquat (dichloride) and paraquat bis(methyl sulfate) | All formulations and concentrations except those listed below. Pressurized spray formulations containing 0.44 pct Paraquat bis(methyl sulfate) and 15 pct petroleum distillates as active ingredients. Liquid fertilizers containing concentrations of 0.025 pct paraquat dichloride and 0.03 percent atrazine; 0.03 pct paraquat dichloride and 0.37 pct atrazine; 0.04 pct paraquat dichloride and 0.49 pct atrazine. | All uses. Spot weed and grass control. | Restricted do | Other hazards. Use and accident history, human toxicological data |
| | | All uses. | Unclassified | |
| Phorate | Liquid formulations 65% and greater. | do | Restricted | Acute dermal toxicity. Residue effects on avian |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification¹ | Criteria Influencing Restriction |
|--------------------------|---|---|-----------------------------------|--|
| Phorate (continued) | All granular formulations. | Rice | Restricted | applications only). Residue effects on mammalian species (applies to foliar application only). Effects on aquatic organisms. |
| | Baits 0.1% and greater. | All uses. | Restricted | Hazard to non-target species. Residues effects on mammalian species. Residue effects on avian species. |
| Phosphamidon | Liquid formulations 75% and greater. | do | do | Acute dermal toxicity. Residue effects on mammalian species. Residue effects on avian species. |
| | Dust formulations 1.5% and greater. | do | do | Residue effects on mammalian species. |
| Picloram | All formulations and concentrations except tordon 101R. | do | do | Hazard to non-target organisms (specifically nontarget plants both crop and noncrop). |
| | Tordon 101 R forestry herbicide containing 5.4 pct picloram and 20.9 pct 2,4-D. | Control of unwanted trees by cut surface treatment. | Unclassified | |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification¹ | Criteria Influencing Restriction |
|-----------------------------|---|---------------------------------------|-----------------------------------|---|
| Sodium cyanide ³ | All capsules and ball formulations. | All uses. | Restricted | Inhalation hazard to humans. |
| Sodium fluoroacetate | All solutions and dry baits. | do | do | Acute oral toxicity. Hazard to nontarget organisms. Use and accident history. |
| Strychnine | All dry baits, pellets and powder formulations greater than 0.5 pct. | do | do | Acute oral toxicity. Hazard to non-target avian species. Use and accident history. |
| | All dry baits, pellets and powder formulations. | All uses calling for burrow builders. | do | Hazard to non-target organisms. |
| | All dry baits, and pellets and powder formulations 0.5 pct and below. | All uses except subsoil. | do | do |
| | do | All subsoil uses. | Unclassified | do |
| Sulfotepp | Sprays and smoke generators. | All uses. | Restricted | Inhalation hazard to humans. |
| Tepp | Emulsifiable concentrate formulations. | do | do | Inhalation hazard to humans. Dermal hazard to humans. Residue effects on mammalian and avian species. |

Appendix 6-1 (continued)

| Active Ingredient | Formulation | Use Pattern | Classification ¹ | Criteria Influencing Restriction |
|-------------------|---------------------------------------|--|-----------------------------|----------------------------------|
| Zinc Phosphide | All formulations 2% and less. | All domestic uses and non-domestic uses in and around buildings. | Unclassified | |
| | All dry formulations 60% and greater. | All uses. | Restricted | Acute inhalation toxicity. |
| | All bait formulations | Nondomestic outdoor uses (other than around buildings). | Restricted | Hazard to nontarget organisms. |
| | All dry formulations 10% and greater. | Domestic uses. | Restricted | Acute oral toxicity. |

NOTE:

- ¹ *Under evaluation* indicates that no classification decision has been made and the use/formulation in question is still under active review within the USEPA.
- ² Percentages given are the total of dioxathion plus related compounds.
- ³ M-44 sodium cyanide capsules may only be used by certified applicators who have also taken the required additional training.

This table lists uses of pesticide products containing the active ingredients specified that have been classified for restricted use and are limited to use by or under the direct supervision of a certified applicator.

Section 7

Petroleum, Oil, and Lubricant (POL) Management

SECTION 7

POL MANAGEMENT

A. Applicability

This section applies to U.S. Army Corps of Engineers (USACE) facilities that store, transport, dispose of, or utilize petroleum-based fuels, oil, and lubricants (POL). The section presents review action items that respond to regulations, procedures, and organizational mechanisms designed to prevent or limit the accidental release of POL materials to surface water, groundwater, or soils. Procedures designed to review the control of Volatile Organic Compounds (VOCs) from POL sources are addressed in Section 1, *Air Emissions Management*.

This section covers POL management of bulk storage tanks, organizational tanks, pipeline delivery systems, truck fill stands, and immediate operating storage areas. POL materials addressed include petroleum, diesel fuel, and lubricating oils. The storage of POL materials in Underground Storage Tanks (USTs) is addressed in Section 10, *Underground Storage Tank (UST) Management*. The storage of POL products on floating plants is addressed in Section 13, *Floating Plant Management*.

POL Management is regulated by Federal (U.S. Environmental Protection Agency (USEPA)) and state regulatory agencies. The implementation of the required regulatory responses at the project level are based on Engineer Regulations (ERs) and technical orders (TOs). The primary focus of the review section worksheets is the organizational mechanisms that control or prevent environmental releases at the source.

B. Federal Legislation

- *The Water Quality Improvement Act of 1974*. This law was the primary Federal law governing the discharge of oil into navigable waters. This regulation prohibits the discharge of *harmful* quantities of oil into navigable waters. 40 Code of Federal Regulations (CFR) 110, *Protection of Environment - Discharge of Oil*, defines *harmful* quantities as those discharges that will cause a sheen or discoloration of the surface of the water or a sludge or emulsion to be deposited beneath the surface of the water.

- *The Oil Pollution Act of 1990*. This law, Public Law (PL) 301-308 (33 U.S. Code (USC) 2701-2761, et. al.) as amended, requires the prevention of oil pollution into navigable waters by tank vessels. See Section 13, *Floating Plant Management*, for additional requirements promulgated under this statute.
- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

C. State/ Local Regulations

- Many states and some major metropolitan and regional planning agencies have developed legislation and implemented regulations that closely parallel the Federal requirements. Some, however, may differ in important ways and the evaluator should obtain copies of the state or local requirements for Oil and Hazardous Substances Pollution Contingency (OHSPC) and Spill Prevention Control and Countermeasures (SPCC) Plans, where appropriate, and review them for those differences before conducting the evaluations. In particular, the evaluator should check for differences in the definitions of reportable quantities and the specific procedures for reporting spills that may exist in state/local regulations.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- ER 1130-2-434, *Response to Oil and Hazardous Substance Incidents*. This regulation provides general policy and guidance concerning the response and preparation for response by operations personnel to oil spill incidents.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- **Plans** - Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC Plan, unless certain criteria are met. The SPCC Plan is required to contain general information about the facility, name and title of the designated coordinator, and an inventory of all storage, handling, and transfer facilities. Each SPCC Plan must be reviewed at least once every 3 yr, unless it is an exempted facility. The SPCC Plan must be reviewed and/or amended when there is a material change in facility design, construction, operation, or maintenance that alters potential for an oil spill. Each SPCC Plan and any amendments must be certified by a professional engineer, and the plan and each amendment must be prepared according to sound engineering practices. A copy of the SPCC Plan is required to be available at sites that are normally attended at least 8 h/day where there is a potential for a discharge. All facility personnel involved with the management and handling of oil must take part in periodic training in spill prevention and response. Projects handling oil are required to have and implement an OHSPC Plan and an Action Plan (40 CFR 112.3, 112.5, 112.7(e)(10), 300.105(a); ER 1130-2-434 para 6e and para 7c(1)).
- **Discharges/Spills** - A discharge of oil into navigable waters of the United States, or adjoining shorelines, or into areas that may affect natural resources belonging to or under the exclusive management authority of the United States must be reported to the National Response Center (NRC). Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged. For example, floating plants should not wash down oily/greasy decks with detergents or solvents (33 CFR 153.201 through 153.203 and 40 CFR 110.2 through 110.10; DOD Directive 5030.41 para D5).
- **Discharge Prevention/Cleanup** - Facilities are required to have appropriate containment and/or diversionary structures and cleanup equipment readily available to prevent discharged petroleum products from reaching navigable water courses (40 CFR 112.7(c)).
- **Aboveground Storage Tanks (ASTs)** - All bulk storage tanks are required to be provided with a secondary means of containment for the entire contents of the largest single tank, plus sufficient freeboard to allow for precipitation. ASTs are required to undergo periodic integrity testing, and a written log kept of this testing. Drainage of rainwater from diked areas must be controlled by a valve that is closed when not in active use. Drainage water that is determined to contain petroleum products in harmful quantities must be treated before discharge to meet applicable water quality standards (40 CFR 112.7(e)(1) through 112.7(e)(2)).

- Service Stations - The storage of liquids at service stations, specifically Class I liquids, has to be done in containers that are secure and prevent the excess release of vapors (29 CFR 1910.106(g)).
- Piping Systems - Buried piping at facility transfer operations, pumping activities and in-plant processing is required to have a protective wrapping and coating to be cathodically protected if soil conditions warrant. All Corps-operated aboveground and belowground fuel piping systems at transfer operation, pumping activities, and in-plant processing must be regularly examined, and any suspected leaks should be investigated immediately (40 CFR 112.7(e)(3)(i) and 112.7(e)(3)(iv)).
- Onshore Oil Pipelines - Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm to the environment by discharging oil into navigable waters are required to prepare a response plan. Copies of the response plan are required to be submitted to the USEPA Research and Special Programs Administration (RSPA) for approval. Copies of the response plan are required to be kept at the operator's headquarters, pump stations, and other places where response activities might be conducted. Training is required for the implementation of the response plan. The Response Plan is required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194).
- Used Oil - Although used oil has not been declared a hazardous waste at the Federal level, it does need to be stored and handled in a manner similar to hazardous waste. In order to determine how the used oil produced at your facility has to be handled, see Appendix 7-1.

F. Key Compliance Definitions

These definitions were obtained from the various regulations cited previously in this section.

- *Automotive Service Station* - that portion of property where flammable or combustible liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles and shall include any facilities available for the sale and service of tire, batteries, and accessories, and for minor automotive maintenance work. Major automotive repairs, painting, body and fender work are excluded (29 CFR 1910.106(a)(3)).
- *Container* - any portable device in which material is stored, transported, treated, disposed of, or otherwise handled (40 CFR 279.1).

- *Contiguous Zone* - the entire zone established or to be established by the United States under article 24 of the Convention on the Territorial Sea and Contiguous Zone (40 CFR 110.1).
- *Continuous Discharge* - a discharge occurring without interruption throughout the operating hours of the facility, except during infrequent shutdowns for maintenance, process changes, or other similar activities (40 CFR 123.3).
- *Daily Discharge* - the discharge of a pollutant measured during a calendar day or any 24-h period that reasonably represents the calendar day for purposes of sampling (40 CFR 122.2).
- *Direct Discharge* - the discharge of a pollutant (40 CFR 122.2).
- *Discharge* - when used in relation to section 311 of the Act, includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping, but excludes (40 CFR 110.1):
 1. discharges in compliance with a permit
 2. discharges resulting from circumstances identified and reviewed and made a part of the public record with respect to an issued permit and subject to a condition in the permit
 3. continuous or anticipated intermittent discharges from a point source, identified in a permit application that are caused by events occurring within the scope of relevant operating or treatment systems.
- *Do-It-Yourselfer (DIY) Used Oil Collection Center* - any site or facility that accepts, aggregates, and stores used oil collected only from household DIYs (40 CFR 279.1).
- *Environmentally Sensitive Area* - an area of environmental importance that is in, or adjacent to, navigable waters (49 CFR 194.5).
- *Existing Tank* - a tank that is used for the storage or processing of used oil and is in operation, or a tank for which installation has commenced on or before the effective date of the authorized used oil program of the state where the tank is located (40 CFR 279.1).
- *Good Management Practice (GMP)* - schedules of activities, prohibitions of practices, maintenance procedures, and other management procedures to prevent or reduce the pollution of *water of the United States*. GMPs also include the treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

- *Household DIY Used Oil* - oil that is derived from households, such as used oil generated by individuals through the maintenance of their personal vehicles (40 CFR 279.1).
- *Navigable Waters* - the waters of the United States, including the territorial seas. Navigable waters do not include prior converted croplands. The term includes (40 CFR 110.2):
 1. all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide
 2. interstate waters, including interstate wetlands
 3. all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce, including any such waters:
 - a. that are or could be used by interstate or foreign travelers for recreational or other purposes
 - b. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce
 - c. that are used or could be used for industrial purposes by industries in interstate commerce
 4. all impoundments of waters otherwise defined as navigable waters under this section
 5. tributaries of waters identified above, including adjacent wetlands
 6. wetlands adjacent to waters identified above.
- *New Tank* - in relation to used oil, a tank that will be used to store or process used oil and for which installation has started after the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).
- *New Tank System or New Component System* - a tank system or component that will be used for the storage and treatment of hazardous waste and for which installation has commenced after 14 July 1986, except however, for purposes of 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after 14 July 1986. (See also existing tank system.) (40 CFR 260.10).
- *Nonwastewaters* - wastes that do not meet the criteria for wastewaters (40 CFR 268.2).
- *Offshore Facility* - any facility of any kind located in, on, or under any of the navigable waters of the United States, and any facility of any kind that is sub-

ject to the jurisdiction of the United States and is located in, on, or under any other waters, other than a vessel or a public vessel (40 CFR 110.2 and 33 CFR 153.103).

- *Off-specification Used Oil* - used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits (40 CFR 279):

| | |
|----------------|------------------|
| Arsenic | 5 ppm maximum |
| Cadmium | 2 ppm maximum |
| Chromium | 10 ppm maximum |
| Lead | 100 ppm maximum |
| Flash Point | 100 °F minimum |
| Total halogens | 4000 ppm maximum |

- *Oil* - when used in relation to section 311 of the Act, means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil (40 CFR 110.2 and 33 CFR 153.103).
- *Onshore Facility* - any facility (including but not limited to, motor vehicles and rolling stock) of any kind located in, on, or under any land within the United States, other than submerged land (40 CFR 110.2 and 33 CFR 153.103).
- *Onshore Oil Pipeline Facilities* - new and existing pipe, rights-of-way and any equipment, facility, or building used in the transportation of oil located in, on, or under, any land within the United States, other than submerged land (49 CFR 194.5).
- *Operator* - in relationship to onshore oil pipeline facilities, a person who owns or operates onshore oil pipeline facilities (49 CFR 194.5).
- *Pipeline* - all parts of an onshore pipeline facility through which oil moves, including, but not limited to, line pipe, valves, and other appurtenances connected to the line pipe, pumping units, fabricated assemblies associated with pumping units, metering and delivery stations and fabricated assemblies therein, and breakout tanks (49 CFR 194.5).
- *Point Source* - any discernible, confined, and discrete conveyance, including, but not limited to, a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater (40 CFR 122.2 and 401.11(d)).

- *Processing* - chemical or physical operations designed to produce products from used oil or to make used oil more amenable for production of fuel oils, lubricants, or other used oil-derived product. Processing includes, but is not limited to, blending used oil with Virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation, and re-refining (40 CFR 279.1).
- *Public Vessel* - a vessel owned, or bareboat chartered, and operated by the United States, by a state or political subdivision thereof, or by a foreign nation, except when such vessel is engaged in commerce (40 CFR 110.2 and 33 CFR 153.103).
- *Qualified Individual* - an English-speaking representative of an operator, located in the United States, available on a 24-h basis, with full authority to: activate and contract with required oil spill removal organizations; activate personnel and equipment maintained by the operator; act as liaison with the On-Scene Coordinator (OSC); and obligate any funds required to carry out all required or directed oil response activities (49 CFR 194.5).
- *Re-refining Distillation Bottoms* - the heavy fractions produced by vacuum distillation of filtered and dehydrated used oil. The composition of still bottoms varies with column operation and feedback (40 CFR 279.1).
- *Response Activities* - the containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to the environment (49 CFR 194.5).
- *Response Area* - the inland zone or coastal zone, as defined in the National Contingency Plan, in which response activity is occurring (49 CFR 194.5).
- *Response Plan* - the operator's core plan and the response zone appendices for responding, to the maximum extent practicable, to a worst case discharge of oil or the substantial threat of such a discharge (49 CFR 194.5).
- *Response Zone* - a geographic area, either along a length of pipeline or including multiple pipelines, containing one or more adjacent line sections, for which the operator must plan for the deployment of and provide spill response capabilities (49 CFR 194.5).
- *Sheen* - an iridescent appearance on the surface of the water (40 CFR 110.2).
- *Sludge* - an aggregate of oil, or oil and other matter of any kind, in any form other than dredged spoil, with a combined specific gravity equivalent to or greater than water (40 CFR 110.2).

- *Spill Event* - a discharge of oil into or upon the navigable waters of the United States or adjoining shorelines in harmful quantities (40 CFR 112.3).
- *Spill Prevention, Control, and Countermeasure (SPCC) Plan* - the SPCC Plan shall be a carefully thought-out plan, prepared in accordance with good engineering practices, that has the full approval of management at a level with authority to commit the necessary resources (40 CFR 112.3).
- *Tank* - any stationary device, designed to contain an accumulation of used oil, that is constructed primarily of nonearthen materials that provide structural support (40 CFR 279.1).
- *Used Oil* - any oil that has been refined from crude oil or any synthetic oil that has been used and, as a result of such use, is contaminated by physical or chemical impurities (40 CFR 279.1).
- *Used Oil Aggregation Point* - any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gal [208.20 L]. Used oil aggregation points may also accept used oil from household DIYs (40 CFR 279.1).
- *Used Oil Burner* - a facility where used oil not meeting the specification requirements is burned for energy recovery (40 CFR 279.1).
- *Used Oil Collection Center* - any site or facility that is registered/licensed/permitted/recognized by a state/county/municipal government to manage used oil and accepts/aggregates and stores used oil collected from used oil generators who bring used oil to the collection centers in shipments of no more than 55 gal [208.20 L]. Used oil collection centers may accept used oil from household DIYs (40 CFR 279.1).
- *Used Oil Fuel Marketer* - any person who conducts either of the following activities (40 CFR 279.1):
 - directs a shipment of off-specification used oil from the facility to a used oil burner
 - claims that used oil, that is to be burned for energy recovery, meets used oil fuel specifications.
- *Used Oil Generator* - any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation (40 CFR 279.1).

- *Used Oil Processor/Re-refiner* - a facility that processes used oil (40 CFR 279.1).
- *Used Oil Transfer Facility* - any transportation related facility, including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 h during the normal course of transportation and no longer than 35 days (40 CFR 279.2).
- *Used Oil Transporter* - any person who transports used oil, any person who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities. Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation but, with the following exception, may not process used oil. Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation) but that are not designed to produce or make more amenable for production of used oil derived products or used oil fuel (40 CFR 279.1).
- *Vessel* - every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, other than a public vessel (40 CFR 110.2).
- *Wetlands* - those areas that are inundated or saturated by surface water or groundwater at a frequency or duration sufficient to support and that, under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 110.2).
- *Worst Case Discharge* - the largest foreseeable discharge of oil, including a discharge from fire or explosion, in adverse weather conditions (49 CFR 194.5).

POL MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|--------------------------------------|---------------------------------|--|
| All Facilities | 7-1 through 7-4 | (4)(5)(9)(10)(14)(15)(16) |
| Handling/Transporting/ Dispensing | 7-5 through 7-13 | (5)(6)(10)(14)(15)(16) |
| Discharges/Spills | 7-14 and 7-15 | (5)(14) |
| Storage/Containment | 7-16 through 7-20 | (5)(6)(7)(10)(14)(15)(16) |
| Piping Systems | 7-21 through 7-31 | (5)(9)(15)(16) |
| Service Stations | 7-32 through 7-35 | (15)(16) |
| Hydroelectric Power Plants | 7-36 | (15)(16) |

(a) CONTACT/ LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact (POC) for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility, RMA - Requires Management Action, C - In Compliance

POL MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

(continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|--|---------------------------------|--|
| Used Oil | | |
| General | 7-37 | (5)(15)(16)(17) |
| Generators | 7-38 through 7-54 | (5)(7)(14)(15)(16)(17) |
| Collection Centers and Aggregation Points | 7-55 through 7-57 | (5)(14)(15)(16) |
| Transportation | 7-58 through 7-66 | (5)(9)(14)(15)(16)(17) |
| Burners | 7-67 through 7-73 | (5)(14)(15)(16)(17) |
| Marketing | 7-74 through 7-78 | (5)(14)(15) |
| Dust Suppression | 7-79 | (5)(14)(15)(16) |

(a)CONTACT/ LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact (POC) for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility. RMA - Requires Management Action. C - In Compliance

POL MANAGEMENT

Records to Review

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Official correspondence with state implementing agency
- Spill Prevention and Response Plan
- Equipment maintenance records
- Records of spill response training programs
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)

Physical Features to Inspect

- Refueling facilities, including:
 - Aboveground and belowground storage tanks and dikes
 - Venting
 - Fill pipes
 - Gauges
- Washrack areas
- Vehicle maintenance areas
- Oil separators
- Oil and hazardous substance site

People to Interview

- Safety and Occupational Health Office
- Environmental Compliance Coordinator (ECC)
- Natural Resources Manager
- Logistics
- Engineering
- Operations
- Emergency Management
- Project Resource Manager
- Facility Managers
- Lab Manager

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. This chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Items Numbers in the 1994 ERGO Manual |
|---|--|
| 7-1 through 7-23 | 7-1 through 7-23 |
| no match | 7-24 and 7-25 |
| 7-24 through 7-29 | 7-26 through 7-31 |
| no match | 7-32 through 7-36 |
| 7-30 through 7-72 | 7-37 through 7-79 |

| | | | |
|--------------------------------------|---|--------------|---------------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

| COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | |
|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>ALL FACILITIES</p> <p>7-1. Determine actions or changes since previous environmental review of POL management (GMP).</p> <p>...</p> <p>7-2. The facility should have access to a current file of applicable Federal regulations, Corps of Engineers' regulations, and state/local POL regulations (GMP).</p> <p>...</p> <p>7-3. Facilities are required to comply with state and local regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> <p>...</p> | <p>Determine if noncompliance issues have been resolved by reviewing the previous POL management review. (5)(10)(15)(16)</p> <p>...</p> <p>Verify that a file of Federal and state POL regulations, SPCC Plan (Spill Prevention), and OHSPC Plan regulations is maintained and kept current at the facility or the district or division office: (4)(5)(10)(14)(15)(16)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance with Pollution Control Standards</i>. - 29 CFR 1910, <i>Occupational Safety and Health Standards</i>. - 33 CFR 153, <i>Coast Guard DOT (Department of Transportation)</i>. - 40 CFR 110, <i>Discharge of Oil</i>. - 40 CFR 112, <i>Oil Pollution Prevention</i>. - 40 CFR 264, <i>Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities</i>. - 40 CFR 265, <i>Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities</i>. - 40 CFR 279, <i>Standards for the Management of Used Oil</i>. - 40 CFR 300, <i>National Oil and Hazardous Substances Pollution Contingency Plan</i>. - 49 CFR 194, <i>Response Plans for Onshore Oil Pipelines</i>. - 49 CFR 195, <i>Transportation of Hazardous Liquids by Pipeline</i>. - DOD 5030.41, <i>Oil and Hazardous Substances Pollution Prevention and Contingency Plan</i>. - ER 1130-2-434, <i>Response to Oil and Hazardous Substance Incidents</i>, 1 July 1985. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - Applicable state and local regulations. <p>...</p> <p>Verify that the facility is complying with state and local requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - spill management - handling of wastewater and fuel sludge from tank cleaning - use of product recovery systems - containment - oil wells/pumps - ASTs - used oil) <p>...</p> |

DIVISION: (4) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (9) Logistics (10) Operations (14) Emergency Management **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

| COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | |
|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-4. Facilities should have a plan for the management of reclaimed, recoverable, and waste liquid petroleum products (GMP).</p> <p>...</p> <p>HANDLING/ TRANSPORTING/ DISPENSING</p> <p>7-5. Petroleum products that are not utilized for their intended purpose should be reclaimed, recovered, and disposed of as waste (GMP).</p> <p>...</p> <p>7-6. Facilities that store, transport, or dispense petroleum products are required to prepare an SPCC Plan (40 CFR 112.3).</p> <p>...</p> | <p>Verify that a Management of Recoverable and Waste Liquid Petroleum Products Plan has been prepared and adopted by the district. (5)(9)(10)(15)(16)</p> <p>...</p> <p>Verify that containers are properly marked and in good condition at accumulation points. (15)(16)</p> <p>Verify that used crankcase oils/lubricants are being collected at motor pools and vehicle maintenance shops. (15)(16)</p> <p>Determine if contaminated, used crankcase oil is regulated as hazardous and disposed of according to applicable <i>Resource Conservation and Recovery Act (RCRA)</i> regulations. (15)(16)</p> <p>Verify that mixed petroleum liquids that are contaminated by halogenated contaminants or industrial chemicals are disposed of as hazardous waste, according to applicable <i>RCRA</i> regulations. (5)(15)(16)</p> <p>...</p> <p>Verify that the facility has an SPCC Plan. (5)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the Department of Transportation (DOT) - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) <p>(NOTE: This applies to onshore and offshore facilities, including onshore and offshore mobile or portable facilities, such as onshore drilling or workover rigs, barge-mounted offshore drilling or workover rigs, and portable fueling facilities.)</p> <p>...</p> |

DIVISION: (4) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (9) Logistics (10) Operations (14) Emergency Management **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

| COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | |
|--|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-7. The SPCC Plan is required to contain specific information (40 CFR 112.7).</p> | <p>Determine if the SPCC Plan has been prepared and reviewed for the following: (5)(14)(15)(16)</p> <ul style="list-style-type: none"> - command approval - spill reporting procedures - prespill planning for major potential spill areas - spill containment and cleanup equipment/facilities - oil spill contingency plan - training procedures - spill response exercises - plan review and update procedures. <p>Verify that the SPCC Plan contains: (5)(14)</p> <ul style="list-style-type: none"> - general information about the facility, including: <ul style="list-style-type: none"> - name - type of function - location of facility drainage patterns - location maps - name and title of designated coordinator - inventory of all storage, handling, and transfer facilities that could produce a significant spill. For each listing include: <ul style="list-style-type: none"> - prediction of direction and rate of flow - total quantity of oil that could be spilled as a result of major failure. <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |

DIVISION: (4) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (9) Logistics (10) Operations (14) Emergency Management **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

| COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-8. Each SPCC Plan must be reviewed at least once every 3 yr (40 CFR 112.5(b)).</p> | <p>Verify that the SPCC Plan has been reviewed at least once every 3 yr. (5)(14)(15)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |
| <p>7-9. The SPCC Plan must be reviewed and/or amended under specific circumstances (40 CFR 112.4 and 112.5(a)).</p> | <p>Verify that the plan was amended if there was a material change in facility design, construction, operations, or maintenance that alters potential for an oil spill. (5)(14)(15)(16)</p> <p>Verify that the plan was sent to the USEPA for review if the facility: (5)(14)(15)(16)</p> <ul style="list-style-type: none"> - discharged more than 1000 gal [3785.41 L] into resource waters in a single spill event - discharged oil in harmful quantities into resource waters in two reportable spill events within any 12-mo period. <p>Verify that if necessary, the plan was amended and recertified by a professional engineer. (5)(14)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-10. Each SPCC Plan and any amendments must be certified by a professional engineer and the plan and each amendment must be prepared according to sound engineering practices (40 CFR 112.3(d) and 112.5 (c)).</p> <p>...</p> <p>7-11. A copy of the SPCC Plan is required to be available at sites that are normally attended at least 8 h/day where there is a potential for a discharge (40 CFR 112.3 (e)).</p> <p>...</p> | <p>Verify that the SPCC Plan has been certified. (5)(14)(15)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) <p>...</p> <p>Verify that a copy of the SPCC Plan is available at facilities that have personnel onsite at least 8 h/day. (5)(14)</p> <p>(NOTE: If personnel are not onsite for 8 h/day, the plan may be kept at the nearest field office, and the plan should be made available to the regional administrator.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-12. All facility personnel involved with the management and handling of oil must take part in periodic training in spill prevention and response (40 CFR 112.7(e)(10) and ER 1130-2-434, para 7c(1)).</p> | <p>Verify, by reviewing training records and interviewing staff, that proper SPCC training has been conducted. (5)(14)(15)(16)</p> <p>Verify that training addresses the procedures to follow when a spill occurs, such as: (5)(14)(15)(16)</p> <ul style="list-style-type: none"> - notification - containment - safety practices. <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |
| <p>7-13. Projects handling oil are required to have and implement an OHSPC Plan and an Action Plan (40 CFR 300.105(a) and ER 1130-2-434, para 6e).</p> | <p>Verify that the following minimum categories are addressed in the project contingency plan: (5)(6)(10)(14)(15)(16)</p> <ul style="list-style-type: none"> - employee responsibilities - review of hazardous materials routinely transported across or adjacent to project boundaries - review of facilities with geographic impact on the project from which hazardous substances could be released - list of the hazardous materials stored and/or used at the project and the planned response for an accidental release - review of significant past incidents directly affecting the project - map, aerial photo, or other method of representing the geography of the project and the surrounding area - description of hydrological and climatological circumstances that could influence response strategy - descriptions of any highly vulnerable project areas - list of protective clothing to be worn during responses, if appropriate - required and suggested reference materials - description of the scope and frequency of training - description of the scope, participants, and frequency of exercises - description and location of project material useful in evacuation and control of an incident site - list of other responders. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-13. (continued)</p> <p>...</p> | <p>Verify that the following minimum categories are addressed in the project action plans for oil and hazardous substance incidents: (5)(14)</p> <ul style="list-style-type: none"> - statement of the purpose of the response - description of safety and occupational health precautions to be taken - list of items to be completed upon discovery or notification of an incident - procedures for an evacuation - notification procedures and alternates - procedures to be followed to deny access and monitoring conditions - procedure for identifying any vulnerable areas that may need immediate attention. <p>Verify that personnel are aware of the plans and are familiar with their contents. (5)(14)</p> <p>(NOTE: Sometimes the OHSPC and the SPCC Plans are combined.)</p> <p>...</p> |
| <p>DISCHARGES/ SPILLS</p> <p>7-14. Discharges of oil into or upon the navigable waters of the United States or adjoining shorelines or into or upon the waters of the contiguous zone or into areas that may affect natural resources belonging to or under the exclusive management authority of the United States must be reported (40 CFR 110.2 through 110.10 and 33 CFR 153.201 through 153.203).</p> <p>...</p> | <p>Determine if the facility has had any discharges of oils. (5)(14)</p> <p>(NOTE: Discharges of oil are defined as those that violate applicable water quality standards or cause a film or a sheen upon, or discoloration of, the surface of the water or adjoining shoreline or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shores.)</p> <p>Verify that the NRC was notified as soon as possible after discovery of a discharge, as defined in the above NOTE. (5)(14)</p> <p>(NOTE: If direct reporting to the NRC is not practicable, reports may be made to the Coast Guard or USEPA predesignated OSC.)</p> <p>(NOTE: Discharges of oil from properly functioning vessel engines are not considered harmful, but discharges of oil from a vessel's bilge are not allowed.)</p> <p>...</p> |
| <p>7-15. Facilities are not allowed to add dispersants or emulsifiers to oils that are discharged (40 CFR 110.8 and DOI Directive 5030.41, para D5).</p> <p>...</p> | <p>Verify that facilities do not add dispersants or emulsifiers to discharges. (5)(14)</p> <p>Verify that floating plant do not wash down oily/greasy decks with detergents or solvents. (5)(14)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>STORAGE/ CONTAINMENT</p> <p>7-16. Appropriate containment, and/or diversionary structures, and cleanup equipment to prevent discharged petroleum products from reaching navigable water course is required to be readily available at the facility (40 CFR 112.7 (c)).</p> | <p>(NOTE: Water is of special concern during fueling of boats on the water and during repair, maintenance and replacement of powerhouse and water control structures.)</p> <p>Determine that at onshore facilities, one of the following prevention systems, or an equivalent, is used: (5)(14)(15)(16)</p> <ul style="list-style-type: none"> - absorbent material - dikes, berms, or retaining walls sufficiently impervious to contain spilled oil - curbing devices - culverting gutters or other drainage systems - weirs, booms, or other barriers - spill diversion ponds - retention ponds. <p>Determine the following for spill equipment in each oil storage area: (15)(16)</p> <ul style="list-style-type: none"> - adequacy of material types and quantities - accessibility of storage location - condition of equipment. <p>Verify that at offshore facilities, one of the following, or an equivalent, is available: (15)(16)</p> <ul style="list-style-type: none"> - curbing - drip pans - sumps - collection systems. <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-17. All bulk storage tanks (over 660 gal [2498.37 L]) are required to be provided with a secondary means of containment for the entire contents of the largest single tank, plus sufficient freeboard to allow for precipitation (40 CFR 112.7(e)(2)(ii)).</p> | <p>Verify that adequate containment is provided for bulk storage tanks in the storage area and at remote tanks. (15)(16)</p> <p>Verify that diked areas are impervious enough to contain spilled oil. (5)(7)(10)(15)(16)</p> <p>(NOTE: Dikes, containment curbs, and pits are commonly employed for this purpose, but may not always be appropriate. An alternative system could consist of a complete drainage trench enclosure arranged so that a spill could terminate and be safely contained in an in-plant catchment basin or holding pond.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L], or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-18. Drainage of rain-water from diked areas must be controlled by a valve that is closed when not in active use (40 CFR 112.7(e)(1) and 112.7(e)(2)(iii)).</p> | <p>Verify, by inspecting drainage valves at diked areas, that valves are closed when not in use. (10)(15)(16)</p> <p>Verify, by interviewing personnel, that drainage valves are attended to when opened to drain a diked/bermed area. (15)(16)</p> <p>Determine if operating personnel understand the meaning of a harmful discharge as described in 40 CFR 110.6. (15)(16)</p> <p>Inspect records to determine if any drainage water that was inspected would represent a harmful discharge. (5)(15)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |
| <p>7-19. Drainage water that is determined to contain petroleum products in harmful quantities must be treated before discharge to meet applicable water quality standards (40 CFR 112.7(e)(2)).</p> | <p>Determine, by interviewing onsite personnel, if discharges containing harmful quantities of petroleum products were properly treated, recovered, or disposed of and reported. (5)(10)(15)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-20. ASTs are required to undergo periodic integrity testing (40 CFR 112.7(e)(2)(vi)).</p> | <p>Verify that periodic leak tests have been conducted (a decrease in converted fuel volume greater than or equal to 1/4 in. [0.64 cm] constitutes a suspected leak) and check the results of these tests. (10)(15)(16)</p> <p>Verify that the district has been notified of all confirmed leaks. (5)(6)(10)</p> <p>Determine if leaking tanks have been repaired or replaced. (5)(15)(16)</p> <p>Verify that a written log of integrity testing has been maintained. (5)(15)(16)</p> <p>(NOTE: Periodic testing should take tank design into account and involve such techniques as hydrostatic testing, visual inspection, or a system of nondestructive shell thickness testing.)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |

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| REGULATORY REQUIREMENTS: | REVIEWEE CHECKS: |
| PIPING SYSTEMS 7-21. Buried piping at facility transfer operations, pumping activities, and in-plant processing is required to have a protective wrapping and coating to be cathodically protected if soil conditions warrant (40 CFR 112.7(e) (3)(i)). | <p>Verify, by examining records and interviewing personnel, that buried fuel piping is properly protected from corrosion. (5)(9)</p> <p>Verify that methods are appropriate and correctly applied if cathodic protection is used. (5)(9)</p> <p>Verify that detected leaks and failures are being reported. (15)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-22. All Corps-operated aboveground and belowground fuel piping systems at transfer operations, pumping activities, and in-plant processing must be regularly examined, and any suspected leaks are required to be investigated immediately (40 CFR 112.7(e)(3)(iv)).</p> <p>...</p> <p>7-23. Corps-operated, off-facility pipelines should be inspected regularly (GMP).</p> <p>...</p> | <p>Verify, by examining records and interviewing personnel, that regular inspections have been conducted. (15)(16)</p> <p>Verify that the aboveground general condition of items, such as flange joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces, has been assessed. (15)(16)</p> <p>Verify that confirmed leaks have been reported and leaking pipes repaired or replaced. (15)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if (40 CFR 112.1(d)(2)):</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities that, because of their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related to onshore and offshore facilities that are subject to the authority of the DOT - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.30 L] or less of oil - the storage capacity that is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L].) <p>...</p> <p>Determine, by examining records, if inspections are performed. (15)(16)</p> <p>Verify, by interviewing personnel, that detected leaks and failures have been reported and leaking pipes repaired or replaced. (15)(16)</p> <p>...</p> |

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| <p>7-24. In specific instances of failure in a pipeline for hazardous liquids, a report must be submitted (49 CFR 195.1, 195.50, and 195.54).</p> | <p>Verify that when there is a release of hazardous liquid or CO₂ that results in any of the following, an accident report is submitted to the DOT within 30 days: (15)(16)</p> <ul style="list-style-type: none"> - explosion or fire not intentionally set by the operator - loss of 50 or more barrels (bbl) [7949.37 L] of hazardous liquid or CO₂ - escape to the atmosphere of more than 5 bbl [794.94 L] a day of highly volatile liquids - death of any person - bodily harm resulting in: <ul style="list-style-type: none"> - loss of consciousness - necessity to carry the person from the scene - necessity for medical treatment - disability which prevents the discharge of normal duties or pursuit of normal activities - estimated property damage to the property of the operator, others, or both, exceeding \$5000. <p>(NOTE: This requirement does not apply to the transportation of:</p> <ul style="list-style-type: none"> - a hazardous liquid that is transported in a gaseous state - a hazardous liquid through a pipeline by gravity - a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe - petroleum in onshore gathering lines in rural areas, except for gathering lines in the inlets of the Gulf of Mexico - a hazardous liquid or CO₂ in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO₂ are produced, or where produced hydrocarbons or CO₂ are first separated, dehydrated, or otherwise processed, whichever facility is farther downstream - a hazardous liquid or CO₂ through onshore production, refining, or manufacturing facilities, or storage or in-plant piping systems associated with such facilities - a hazardous liquid or CO₂ by vessel, aircraft, tank truck, tank car or other vehicle, or terminal facilities used exclusively to transport hazardous liquids or CO₂ between such modes of transportation - CO₂ downstream from a point in the vicinity of the well site at which CO₂ is delivered to a production facility.) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-25. Under specific circumstances, if there is a release of a hazardous liquid or CO₂ transported in a pipeline, telephone notification must be made as soon as possible after discovery of the release (49 CFR 195.1 and 195.52).</p> | <p>Verify that telephone notification is made as soon as possible of any failure that: (15)(16)</p> <ul style="list-style-type: none"> - caused a death or a personal injury requiring hospitalization - resulted in either a fire or explosion not intentionally set by the operator - caused estimated damage to the property of the operator, others, or both, exceeding \$5000 - resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shoreline - is significant, in the judgement of the operator, even though it did not meet any of the above criteria. <p>(NOTE: Telephone reports are to be made to 1-800-424-8802.)</p> <p>(NOTE: This does not apply to the transportation of:</p> <ul style="list-style-type: none"> - a hazardous liquid that is transported in a gaseous state - a hazardous liquid through a pipeline by gravity - a hazardous liquid through pipelines that operate at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe - petroleum in onshore gathering lines in rural areas, except for gathering lines in the inlets of the Gulf of Mexico - a hazardous liquid or CO₂ in offshore pipelines which are located upstream from the outlet flange of each facility on the Outer Continental Shelf where hydrocarbons or CO₂ are produced, or where produced hydrocarbons or CO₂ are first separated, dehydrated, or otherwise processed, whichever facility is farther downstream - a hazardous liquid or CO₂ through onshore production, refining or manufacturing facilities, or storage or in-plant piping systems associated with such facilities - a hazardous liquid or CO₂ by vessel, aircraft, tank truck, tank car or other vehicle, or terminal facilities used exclusively to transport hazardous liquids or CO₂ between such modes of transportation - CO₂ downstream from a point in the vicinity of the well site at which CO₂ is delivered to a production facility.) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-26. Facilities with onshore oil pipelines that, because of location, could reasonably be expected to cause substantial harm or significant and substantial harm to the environment by discharging oil into or on any navigable waters of the United States or adjoining shorelines are required to prepare a response plan (49 CFR 194.3 and 194.101 through 194.107).</p> | <p>Verify that the response plan includes: (15)(16)</p> <ul style="list-style-type: none"> - a statement indicating which sections in a response zone can be expected to cause significant and substantial harm to the environment if there is a discharge of oil into or on the navigable water or adjoining shorelines - indications of the worst case discharge - immediate notification procedures - spill detection and mitigation procedures - name, address, and phone number of an oil spill response organization - response activities and response resources - training procedures - equipment testing - schedules for drilling - plan updating procedures - appendix for each response zone indicating all the above general information in a way that is tailored to that response zone. <p>Verify that the response plan is in English and, if necessary, any other language understood by personnel responsible for carrying out the plan. (15)(16)</p> <p>(NOTE: Significant and substantial harm can be expected if the line is greater than 6 5/8 in. [16.83 cm] in outside nominal diameter, and greater than 10 mi [16.09 km] in length and if the line section:</p> <ul style="list-style-type: none"> - has experienced a release greater than 1000 bbl [158,987.3 L] in the previous 5 yr - has experienced two or more reportable releases in the previous 5 yr - contains any electric resistance welded pipe, manufactured before 1970 and operated at maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe - is located within a 5 mi [8.05 km] radius of potentially affected public drinking water intakes and could reasonably be expected to reach the intake - is located within a 1 mi [1.61 km] radius of potentially affected environmentally sensitive areas and could reasonably be expected to reach these areas.) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| 7-26. (continued) | <p>(NOTE: The requirement to submit a response plan is effective 18 February 1993. After 18 August 1993, the onshore pipeline must be operated according to the details outlined in the response plan.)</p> <p>(NOTE: A response plan is not required for the following facilities:</p> <ul style="list-style-type: none"> - a pipeline that is 6 5/8 in. [16.83 cm] or less in outside nominal diameter and is 10 mi [16.09 km] or less in length, when all of the following conditions apply: <ul style="list-style-type: none"> - the pipeline has not experienced a release greater than 1000 bbl [158,987.3 L] within the previous 5 yr - the pipeline has not experienced at least two reportable releases within the previous 5 yr - the pipeline contains any electric resistance welded pipe, manufactured before 1970 and does not operate at a maximum operating pressure that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe - the pipeline is not in proximity to navigable waters, public drinking water intakes, or environmentally sensitive areas - a line section that is greater than 6 5/8 in. [16.83 cm] in outside nominal diameter and is greater than 10 mi [16.09 km] in length, where the operator determines that it is unlikely that the worst case discharges from any point on the line section would adversely affect, within 12 h after the start of discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas - a line section that is 6 5/8 in. [16.83 cm] or less in outside nominal diameter and is 10 mi [16.09 km] or less in length, where the operator determines that it is unlikely that the worst case discharge from any point on the line section would adversely affect, within 4 h after the initiation of the discharge, any navigable waters, public drinking water intakes, or environmentally sensitive areas.) <p>...</p> |
| 7-27. Copies of the response plan are required to be submitted to the USEPA RSPA (49 CFR 194.119(a) through 194.119(d)). | <p>Verify that two copies of the response plan were submitted to the following: (15)(16)</p> <p style="padding-left: 40px;">Pipelines Response Plans Officer Research and Special Programs Administration Department of Transportation 400 Seventh St. SW. Washington D.C. 20590-0001.</p> <p>Verify that the RSPA approved the response plan. (15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-28. If the RSPA does not approve a response plan for a pipeline identified as expected to cause significant and substantial harm to the environment, the operator must submit certification to the RSPA by 18 July 1993 that the operator has obtained, through contract or other means, the necessary personnel and equipment to respond to a worst case discharge or a substantial threat of a discharge (49 CFR 194.119(e)).</p> <p>...</p> <p>7-29. Copies of the response plan are required to be kept at specific locations (49 CFR 194.111).</p> <p>...</p> | <p>Determine if the facility has an approved response plan. (15)(16)</p> <p>Verify that if there is not an approved response plan, the necessary certification has been submitted to the RSPA. (15)(16)</p> <p>...</p> <p>Verify that a copy of the complete response plan is at the operator's headquarters and a copy is provided to each responsible individual. (15)(16)</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices for each line section whose pressure may be affected by the operation of a particular pump station is provided at the pump station. (15)(16)</p> <p>Verify that a copy of the core portion of the plan and relevant response zone appendices is kept at locations where response activities might be conducted. (15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-30. Training is required for the implementation of the response plan (49 CFR 194.117).</p> <p>...</p> <p>7-31. Pipeline response plans are required to be reviewed every 3 yr from the date of submission and modified to address new or different operating conditions or information (49 CFR 194.121).</p> <p>...</p> | <p>Verify that training is conducted such that all personnel know: (15)(16)</p> <ul style="list-style-type: none"> - their responsibilities under the plan - the procedures, names, and addresses necessary for contacting the operator, or a qualified individual, on a 24-h basis. <p>Verify that reporting personnel know: (15)(16)</p> <ul style="list-style-type: none"> - the content of the information summary - the toll free number of the NRC - the notification process. <p>Verify that personnel engaged in response activities know: (15)(16)</p> <ul style="list-style-type: none"> - the characteristics and hazards of oil discharged - the conditions that are likely to worsen emergencies and the appropriate corrective actions - the steps needed to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage - the proper firefighting procedures and use of equipment, fire suits, and breathing apparatus. <p>Verify that training records exist for each individual who has been trained, specifically records for: (15)(16)</p> <ul style="list-style-type: none"> - operator personnel, maintained at the operators headquarters - personnel engaged in response, maintained as determined by the operator. <p>(NOTE: This training does not take the place of emergency response training requirements as found in 29 CFR 1910.120.)</p> <p>...</p> <p>Verify that the plan is reviewed every 3 yr. (15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>SERVICE STATIONS</p> <p>7-32. Liquids at service stations are required to be stored in approved closed containers not exceeding 60 gal [227.12 L] capacity, in tanks underground, tanks in special enclosures, or in aboveground tanks that meet specific requirements (29 CFR 1910.106(g)(1)(i)(a) through 1910.106(g)(1)(i)(e), 1910.106(g)(1)(ii), and 1910.106(g)(1)(iii)).</p> <p>...</p> <p>7-33. Class I liquids at service stations are required to not be stored or handled within a building having a basement or pit into which flammable vapors can travel (29 CFR 1910.106(g)(1)(i)(f)).</p> | <p>Verify that if aboveground tanks are located in an adjoining bulk plant, they are connected by piping to service station underground tanks if, in addition to valves at the aboveground tank, there is a valve installed within the control of service station personnel. (15)(16)</p> <p>Verify that apparatus for dispensing Class I liquids into the fuel tanks of motor vehicles of the public is not located at a bulk plant unless it is separated by a fence or similar barrier from the area in which bulk operations occur. (15)(16)</p> <p>(NOTE: These requirements do not prohibit the dispensing of flammable liquids out in the open from a tank vehicle to a motor vehicle if:</p> <ul style="list-style-type: none"> - the tank vehicle complies with the requirements in <i>Standard on Tank Vehicles for Flammable Liquids, National Fire Prevention Association (NFPA) 385-1966</i> - the dispensing is done on premises not open to the public - the dispensing hose does not exceed 50 ft [15.24 m] - the dispensing nozzle is a listed automatic closing type without a latchopen device.) <p>Verify that underground tanks are installed as required by the section titled <i>UST Management</i>. (15)(16)</p> <p>Verify that if tanks for flammable or combustible liquids are installed in enclosures, because it is impractical due to property or building limitations to correctly install USTs, the enclosure meets the following: (15)(16)</p> <ul style="list-style-type: none"> - it is substantially liquid and vapor tight without backfill - sides, top, and bottom of the enclosure are of reinforced concrete at least 6-in. [15.24-cm] thick - openings for inspection are only on the top - tank connections are piped or closed so that neither vapors nor liquid can escape into the enclosed space - means are provided so that portable equipment can be used to discharge to the outside any liquid or vapors that might accumulate if leakage occurs. <p>Verify that Class II and III liquids are not stored or dispensed inside service station buildings from tanks of more than 120 gal [454.25 L] capacity. (15)(16)</p> <p>...</p> <p>Verify that Class I liquids are not stored or handled in a building with a basement or pit into which flammable vapors can travel unless the area is provided with adequate ventilation. (15)(16)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-34. Dispensing of Class I liquids into portable containers is restricted (29 CFR 1910.106(g)(1)(v)).</p> <p>...</p> <p>7-35. Dispensing devices at automotive service stations are required to meet specific standards (29 CFR 1910.106(g)(3)).</p> <p>...</p> | <p>Verify that Class I liquids are not dispensed into portable containers unless the container is constructed of metal, has a tight closure with screwed or spring cover, and is fitted with a spout or designed to prevent spilling. (15)(16)</p> <p>...</p> <p>Verify that dispensing systems are located so that all parts of the vehicle being served are located on the premises of the station. (15)(16)</p> <p>Verify that if the dispensing unit is located inside a building, the following are met: (15)(16)</p> <ul style="list-style-type: none"> - the dispensing area is separated from other areas - the unit and its piping are either mounted on a concrete island or protected against collision damage - the area has an approved mechanical or gravity ventilation system. <p>(NOTE: When indoor dispensing units are below grade, only approved mechanical ventilation can be used.)</p> <p>Verify that all dispensing units are equipped with a clearly identified and easily accessible switch or circuit breaker, at a location remote from the dispensing devices, to shut off power in case of an emergency. (15)(16)</p> <p>Verify that Class I liquids are transferred from tanks by means of a fixed pump that is designed and operated to prevent leakage or accidental discharge. (15)(16)</p> <p>Verify that Class I liquids are not dispensed by pressure from drums, barrels, or similar containers. (15)(16)</p> <p>Verify that all dispensing units, except those attached to a container, are mounted so as to prevent damage from a collision. (15)(16)</p> <p>Verify that the nozzles on Class I dispensing units are listed manual or automatic closing type hose nozzles. (15)(16)</p> <p>...</p> |
| <p>HYDROELECTRIC POWER PLANTS</p> <p>7-36. In addition to requirements outlined in this section, hydroelectric power plants should manage POL to prevent excessive discharges (GMP).</p> <p>...</p> | <p>...</p> <p>Verify that excess oil is cleaned out of the gate well. (15)(16)</p> <p>Verify that an inventory on POL use is maintained. (15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>USED OIL</p> <p>General</p> <p>7-37. Depending on the constituents of the used oil. (see Appendix 7-1 and the flowchart in the <i>POL Introduction</i>), facilities are required to handle used oil as a hazardous waste or according to specific used oil requirements (40 CFR 279.10).</p> <p>...</p> <p>Generators</p> <p>7-38. Used oil generators that detect a release (other than a UST release) after the effective date of the authorized used oil program of the state where the release is located must meet specific requirements (40 CFR 279.22(d)).</p> <p>...</p> | <p>Determine which types of the used oils listed in Appendix 7-1 are generated at the facility. (5)(15)(16)(17)</p> <p>Verify that used oil is handled according to its classification as one of the following (see flowchart): (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - a hazardous waste - used oil that falls under the requirements of 40 CFR 279 (see checklist items 7-37 through 7-79) - used oil that is not subject to the requirements of 40 CFR 279 and neither is it a hazardous waste unless testing indicate it does contain hazardous constituents. <p>...</p> <p>(NOTE: The requirements for used oil generators do not apply to the following:</p> <ul style="list-style-type: none"> - household DIY used oil generators - vessels at sea or at port (in these cases generation occurs when it is transported ashore) - mixtures of used oil and diesel fuel mixed by the generators for use in the generators own vehicles - farmers who generate an average of 25 gal [94.64 L] per month or less of used oil from vehicles or machinery used on the farm in a calendar year.) <p>(NOTE: In relation to used oil coming ashore from vessels, the owner or operator of the vessel and the person removing or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste as used oil once it is ashore.)</p> <p>Verify that when a release is detected, the following is done: (5)(14)(15)(16)</p> <ul style="list-style-type: none"> - the release is stopped - the released used oil is contained - the released used oil is cleaned up and properly managed - any leaking used oil storage containers or tanks are repaired or replaced before returning them to service. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-39. Generators are allowed to burn used oil in used oil-fired space heaters if specific parameters are met (40 CFR 279.23).</p> <p>...</p> <p>7-40. Except in specific circumstances, used oil generators must ensure that their used oil is transported only by transporters who have USEPA ID No. (40 CFR 279.24).</p> <p>...</p> <p>7-41. Used oil generators are not allowed to mix hazardous waste with used oil unless specific parameters are met (40 CFR 279.21(a)).</p> <p>...</p> | <p>Determine if the installation operates any used oil-fired space heaters. (5)(14)</p> <p>Verify that the following parameters are met: (5)(14)(15)(16)</p> <ul style="list-style-type: none"> - the heater burns only used oil that the installation generates or used oil received from household DIY used oil generators - the heater is designed to have a maximum capacity of no more than 0.5 million British thermal units (MBtu)/h [0.15 W/h] - the combustion gases from the heater are vented to the ambient air. <p>...</p> <p>Determine if the installation is transporting used oil or contracting the transportation of used oil. (5)(14)(15)(16)</p> <p>Verify that the transporter has a USEPA ID No., except when: (5)(14)</p> <ul style="list-style-type: none"> - the generator does not transport more than 55 gal [208.20 L] at any time, the vehicle used is owned by the generator or an employee of the generator, and the used oil is going to a used oil collection center that is permitted - the generator is transporting the used oil to an aggregation point, owned and/or operated by the same generator, in a vehicle owned by the generator or an employee and no more than 55 gal [208.20 L] is transported - the used oil is reclaimed under a contractual agreement, the reclaimed oil is returned to the generator for use as lubricant, cutting oil, or coolant, and the contract (or tolling agreement) contains the following: <ul style="list-style-type: none"> - the type of used oil and frequency of shipments - verification that the vehicle used for transportation is owned by the used oil processor/refiner - verification that reclaimed oil will be returned to the generator. <p>...</p> <p>Verify that the installation does not mix hazardous waste with used oil, unless: (5)(14)(15)(16)</p> <ul style="list-style-type: none"> - the resulting mixture does not exhibit any characteristics of hazardous waste - the waste is hazardous solely because it exhibits the characteristic of ignitability and is not a listed hazardous waste. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-42. The label USED OIL must be clearly marked on containers and ASTs used to store used oil and on fill pipes used to transfer used oil into underground storage facilities (40 CFR 279.22(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that containers, ASTs, and fill pipes used to transfer used oil are clearly marked with the phrase USED OIL. (5)(14)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>7-43. Containers and tanks used to store used oil at used oil generators must be in good condition and not leaking (40 CFR 264.171, 265.171, and 279.22(a) through 279.22(b)).</p> <p style="text-align: center;">...</p> | <p>Verify that containers and tanks are not leaking, bulging, rusting, damaged, or dented. (5)(14)(15)(16)(17)</p> <p>Verify that used oil is transferred to a new container or managed in another appropriate manner when necessary. (5)(14)</p> <p style="text-align: center;">...</p> |
| <p>7-44. Containers used at used oil generators must be made of, or lined with, materials compatible with the used oil stored in them (40 CFR 264.172, 265.172, and 279.22(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that containers are compatible with used oil. (5)(14)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>7-45. Containers at used oil generators must be closed during storage and handled in a safe manner (40 CFR 264.173, 265.173, and 279.22(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that containers are closed, except when it is necessary to add or remove used oil (check bungs and look for open tunnels). (5)(14)(15)(16)(17)</p> <p>Verify that handling and storage practices do not cause damage to the containers or cause them to leak. (5)(14)</p> <p style="text-align: center;">...</p> |
| <p>7-46. Containers of used oil at used oil generators should be managed properly (GMP).</p> <p style="text-align: center;">...</p> | <p>Inspect containers and storage areas to determine the following: (5)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - containers are not stored more than two high and have pallets between them - at least 3 ft [0.91 m] of aisle space is provided between rows of containers. <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-47. Secondary containment is required for specific types of tank systems used to store or treat used oil at used oil generators (40 CFR 264.190(a), 264.190(b), 264.193(a), 265.190(a), 265.190(b), 265.193(a), and 279.22(a)).</p> <p>...</p> <p>7-48. Secondary containment on tank systems at used oil generators must meet specific requirements (40 CFR 264.190(a), 264.193(b) through 264.193(d), 265.190(a), 265.193(b) through 265.193(d), and 279.22(a)).</p> <p>...</p> | <p>Verify that the following types of tanks used to store or treat used oil have secondary containment: (5)(7)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - all new tank systems or components - existing tank systems of known documented age that are 15 yr old. <p>Verify that existing tank systems for which the age cannot be determined within 8 yr of 12 January 1987, and which are at a facility older than 7 yr, are provided with secondary containment by the time the facility reaches 15 yr of age or 12 January 1989, whichever comes later. (5)(14)</p> <p>...</p> <p>Verify that secondary containment meets the following criteria: (5)(7)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is designed, installed, and operated to prevent the migration of liquid out of the system - it is capable of detecting and collecting releases and accumulated liquids until removal is possible - it is constructed of, or lined with, materials compatible with the used oil - it is placed on a foundation or base that can provide appropriate support and prevent failure as a result of settlement, compression, or upset - it has a leak-detection system designed and operated to detect the failure of either the primary or secondary containment structure or the release of any used oil within 24 h or the earliest practicable time - it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation. <p>Verify that spilled or leaked used oil is removed from secondary containment within 24 h or as timely as possible. (5)(14)</p> <p>Verify that secondary containment for tanks includes one or more of the following: (5)(14)</p> <ul style="list-style-type: none"> - a liner (external to the tank) - a vault - a double-walled tank - an equivalent approved device. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-49. External liners, vaults and double-walled tanks at used oil generators are required to meet specific standards (40 CFR 264.190(a), 264.193(e), 265.190(a), 265.193(e), and 279.22(a)).</p> <p>...</p> | <p>Verify that an external liner system meets the following requirements: (5)(7)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - it is designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained - it prevents run-on and infiltration of precipitation into the secondary containment, unless the collection system has sufficient capacity to handle run-on or infiltration - it is free of cracks or gaps - it surrounds the tank completely and covers all surrounding earth likely to come into contact with the used oil if there is a release - the capacity is sufficient to contain precipitation from a 25-yr. 24-h rainfall event. <p>Verify that a vault system meets the following criteria: (5)(14)</p> <ul style="list-style-type: none"> - it will contain 100 percent of the capacity of the largest tank within its boundary - it prevents run-on and infiltration of precipitation, unless there is sufficient excess capacity - it is constructed with chemical-resistant water stops at all joints - it has an impermeable interior coating that is compatible - it has a means to protect against the formation of and ignition of vapors within the vault if the waste is ignitable or reactive - it has an exterior moisture barrier or is otherwise operated to prevent migration of moisture into the vault. <p>Verify that a double-walled tank meets the following criteria: (5)(14)</p> <ul style="list-style-type: none"> - it is designed as an integral structure so that any release is contained by the outer shell - it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal - it has a built-in continuous leak detection system capable of detecting a release within 24 h. <p>...</p> |
| <p>7-50. Tank ancillary equipment at used oil generators must also be provided with secondary containment (40 CFR 264.190(a), 264.193(f), 265.190(a), 265.193(f), and 279.22(a)).</p> <p>...</p> | <p>Verify that ancillary equipment, except for the following, has secondary containment: (5)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - aboveground piping that is visually inspected for leaks on a daily basis - welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis - sealless or magnetic coupling pumps and sealless valves that are visually inspected for leaks on a daily basis - pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. <p>...</p> |

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| COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-51. Tank systems at used oil generators that are required to have secondary containment but do not have secondary containment must meet specific requirements (40 CFR 264.190 (a), 264.191(a) through 264.191(c), 264.193(i), 265.190(a), 265.191(a) through 265.191(c), 265.193(i), and 279.22 (a)).</p> <p>...</p> <p>7-52. Used oil generators with new tank systems must submit to the Regional Administrator a written assessment review certified by an independent, qualified, registered professional engineer and install the tank according to specific standards (40 CFR 264.192, 265.192, and 279.22(a)).</p> <p>...</p> <p>7-53. Tanks used for used oil treatment or storage at used oil generators must follow certain operating requirements (40 CFR 264.194, 265.194, and 279.22(a)).</p> <p>...</p> | <p>Verify that tank systems without secondary containment meet the following: (5)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - for nonenterable underground tanks, a leak test is conducted annually - for other than nonenterable underground tanks, either a leak test is done annually or the facility develops a schedule and procedure for an assessment of the overall condition by an independent, qualified, registered professional engineer - for ancillary equipment, a leak test or other approved integrity assessment is done at least annually. <p>Verify that the facility maintains a record of assessments and test results. (5)(14)</p> <p>...</p> <p>Determine if the used oil generator has any new tank systems. (5)(14)(15)(16)(17)</p> <p>Verify that when the tanks are installed, they are handled so as to prevent damage to the tanks and that any backfill material used is a noncorrosive, porous, homogeneous substance. (5)(14)</p> <p>Verify that the facility keeps on file the written assessments from the individuals required to certify the tank and supervise the installation of the tank. (5)(14)</p> <p>...</p> <p>Verify that used oil is not placed in tanks if it could cause the tank system (including the ancillary equipment or containment system) to fail. (5)(14)(15)(16)(17)</p> <p>Verify that appropriate measures are taken to prevent overfill, including: (5)(14)</p> <ul style="list-style-type: none"> - spill prevention controls - overfill prevention controls - maintenance of sufficient freeboard to prevent overtopping by waves, wind action, or precipitation for uncovered tanks. <p>...</p> |

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| COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-54. Tank systems at used oil generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 264.198, 264.199, 265.198, 265.199, and 279.22(a)).</p> <p>...</p> <p>Collection Centers and Aggregation Points</p> <p>7-55. DIY used oil collection centers are required to meet the same standards as used oil generators (40 CFR 279.30).</p> <p>...</p> <p>7-56. Used oil collection centers are required to be licensed/permitted and operated according to specific standards (40 CFR 279.31).</p> <p>...</p> | <p>Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: (5)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met - the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react - the tank system is used solely for emergencies. <p>Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's <i>Flammable and Combustible Liquids Code</i> are maintained. (5)(14)</p> <p>Verify that incompatible wastes or incompatible wastes and materials are not placed in the same tank system, unless minimum safety requirements are met. (5)(14)</p> <p>Verify that used oil is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material, unless minimum safety requirements are met. (5)(14)</p> <p>...</p> <p>Verify that DIY used oil collection centers, such as the auto hobby shop, meet the requirements outlined in the checklist section titled <i>USED OIL - Generators</i>. (5)(14)(15)(16)</p> <p>...</p> <p>Determine if the facility operates a used oil collection center. (5)(14)(15)(16)</p> <p>Verify that the collection center meets the requirements for used oil generators outlined in the checklist sections titled <i>USED OIL - Generators</i>. (5)(14)</p> <p>Verify that the collection center is registered/licensed/permitted/recognized by a state/county/municipal government to manage used oil. (5)(14)</p> <p>...</p> |

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**COMPLIANCE CATEGORY:
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-57. Used oil aggregation points are required to be operated according to the standards for used oil generators (40 CFR 279.32).</p> <p align="center">...</p> | <p>Verify that the used oil aggregation point is operated according to the standards outlined in the checklist section titled <i>USED OIL - Generators</i>. (5)(14)(15)(16)</p> <p align="center">...</p> |
| <p>Transportation</p> | <p>(NOTE: These requirements concerning transportation and transfer of used oil do not apply to the following:</p> <ul style="list-style-type: none"> - onsite transportation - generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil collection center - generators who transport shipments of used oil totaling 55 gal [208.20 L] or less from the generator to a used oil aggregation point owned by the generator - transportation of used oil generated by household DIYs from the initial generator to a regulated generator, collection center, aggregation point, processor/refiner, or burner.) |
| <p>7-58. Transporters who put used oil in a truck that has previously transported hazardous waste without emptying and cleaning the truck are required to transport and handle the used oil as a hazardous waste (40 CFR 279.40(b) through 279.40(c)).</p> <p align="center">...</p> | <p>Verify that used oil that is contaminated with hazardous waste is transported as a hazardous waste, according to the standards in Section 4, <i>Hazardous Waste Management</i>. (5)(9)(14)(15)(16)(17)</p> <p>(NOTE: Installations that transport used oil imported from abroad or exported outside of the United States must meet these requirements while in the boundaries of the United States.)</p> <p align="center">...</p> |
| <p>7-59. Used oil transporters can consolidate or aggregate loads of used oil (40 CFR 279.41).</p> <p align="center">...</p> | <p>Verify that transporters conduct only incidental processing operations, such as settling and water separation, unless they also comply with the requirements for processors and refiners. (5)(9)(14)(15)(16)(17)</p> <p align="center">...</p> |
| <p>7-60. Used oil transporters are required to have a USEPA ID No. (40 CFR 279.42).</p> <p align="center">...</p> | <p>Verify that if the facility is transporting used oil, it has a USEPA ID No. (5)(9)(14)(15)(16)(17)</p> <p align="center">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-61. Transporters must meet specific requirements for deliveries and shipments of used oil (40 CFR 279.43(a) through 279.43(b)).</p> <p>...</p> | <p>Verify that all used oil is delivered to: (5)(9)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - another used oil transporter if the transporter has a USEPA ID No. - a used oil processing/re-refining facility with a USEPA ID No. - an off-specification used oil burner facility with a USEPA ID No. - an on-specification used oil burner facility. <p>Verify that DOT labeling, packaging, and placarding requirements are met. (5)(14)</p> <p>...</p> |
| <p>7-62. Transporters are required to take specific actions if there is a discharge of used oil during transportation (40 CFR 279.43(c)).</p> <p>...</p> | <p>Verify that if there is a discharge, the following are done: (5)(9)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - notify authorities (NRC) - contain the discharge - submit a written report to the DOT - cleanup. <p>...</p> |
| <p>7-63. Transporters are required to determine if the total halogen content of used oil being transported or stored at a transfer facility is above or below 1000 ppm (40 CFR 279.44).</p> <p>...</p> | <p>Verify that the transporter determines the total halogen content of the used oil by one of the following methods: (5)(9)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - testing the used oil - applying knowledge of halogen content of the used oil in light of the materials or processes used. <p>Verify that records of analyses are kept for 3 yr. (5)(14)</p> <p>...</p> |
| <p>7-64. Used oil transporters are required to keep records for used oil shipments and deliveries (40 CFR 279.46).</p> | <p>Verify that the following records are kept for each shipment accepted for transport: (5)(9)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport - USEPA ID No. - quantity of oil accepted - day of acceptance - signature of receipt. <p>Verify that the following records are kept for each delivery to another used oil transporter or to a used oil burner, processor/re-refiner, or disposal facility and for export/import activities: (5)(14)</p> <ul style="list-style-type: none"> - name and address of the receiving facility or transporter - USEPA ID No. of the receiving facility or transporter - quantity of used oil delivered - date of delivery - signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter. <p>Verify that records are maintained for 3 yr. (5)(14)</p> |

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| COMPLIANCE CATEGORY: POL MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-65. Transfer facilities are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.45(b) through 279.45(g)).</p> <p>...</p> <p>7-66. Specific steps must be followed in response to a release at a transfer facility (40 CFR 279.45(h)).</p> <p>...</p> <p>Burners</p> <p>7-67. Off-specification used oil fuel may be burned for energy recovery in industrial furnaces and boilers if specific requirements are met (40 CFR 279.12(c), 279.60(a), and 279.61(a)).</p> <p>...</p> | <p>Verify that the tanks and containers at transfer facilities meet the requirements outlined in the checklist section titled <i>USED OIL - Generators</i>. (5)(9)(14)(15)(16)</p> <p>Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements: (5)(14)</p> <ul style="list-style-type: none"> - dikes, berms, or retaining walls - a floor that covers the entire area within the dikes, berms, or retaining walls - an impervious system. <p>Verify that containers and aboveground tanks are labeled with the phrase USED OIL. (5)(14)</p> <p>Verify that fill pipes used to transfer used oil into USTs at transfer facilities are labeled USED OIL. (5)(14)</p> <p>...</p> <p>Verify that the following steps are taken: (5)(9)(14)(15)(16)</p> <ul style="list-style-type: none"> - the release is stopped - the release is contained - the release is cleaned up and properly managed - necessary repairs and replacements are done. <p>...</p> <p>Determine if the facility burns used oil fuel for the purpose of energy recovery. (5)(14)(15)(16)(17)</p> <p>Verify that off-specification used oil fuel is only burned for energy recovery in one of the following: (5)(14)</p> <ul style="list-style-type: none"> - an industrial furnace - a boiler that is identified as one of the following: <ul style="list-style-type: none"> - industrial boilers that are located on the site of a facility engaged in a manufacturing process where substances are transformed into new products by mechanical or chemical processes - utility boilers used to produce electric power steam, heated or cooled air, or other gases or fluids for sale - used oil-fired space heaters - hazardous waste incinerators. <p>(NOTE: The following activities are exempt from these requirements:</p> <ul style="list-style-type: none"> - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.) <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-68. Used oil burners are required to have a USEPA ID No. (40 CFR 279.60(a) and 279.62).</p> <p>...</p> <p>7-69. Used oil burners are required to determine if the used oil is a hazardous waste (40 CFR 279.60(a) and 279.63).</p> <p>...</p> <p>7-70. Used oil burners are required to store used oil in tanks and containers that meet specific requirements (40 CFR 279.60(a) and 279.64(a) through 279.64(f)).</p> <p>...</p> <p>7-71. Specific steps must be followed in response to a release at a used oil burner facility (40 CFR 279.60(a) and 279.64(g)).</p> <p>...</p> | <p>Verify that the facility has a USEPA ID No. (5)(14)(15)(16)(17)</p> <p>(NOTE: The following activities are exempt from these requirements:</p> <ul style="list-style-type: none"> - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.) <p>...</p> <p>Verify that the used oil is either tested or the used oil burner applies his or her knowledge of the halogen content of the used oil in light of the materials or processes used or uses information from another source. (5)(14)(15)(16)(17)</p> <p>Verify that copies of analyses are maintained for 3 yr. (5)(14)</p> <p>...</p> <p>Verify that the tanks and containers at used oil burners meet the requirements outlined in the checklist section titled <i>USED OIL - Generators</i>. (5)(14)(15)(16)(17)</p> <p>Verify that containers and ASTs used to store used oil have secondary containment that meets the following minimum requirements: (5)(14)</p> <ul style="list-style-type: none"> - dikes, berms, or retaining walls - a floor that covers the entire area within the dikes, berms, or retaining walls - an impervious system. <p>Verify that containers and aboveground tanks are labeled with the phrase USED OIL. (5)(14)</p> <p>Verify that fill pipes used to transfer used oil into underground storage tanks at used oil burners are labeled USED OIL. (5)(14)</p> <p>(NOTE: The following activities are exempt from these requirements:</p> <ul style="list-style-type: none"> - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.) <p>...</p> <p>Verify that the following steps are taken: (5)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - the release is stopped - the release is contained - the release is cleaned up and properly managed - necessary repairs and replacements are done. <p>(NOTE: The following activities are exempt from these requirements:</p> <ul style="list-style-type: none"> - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.) <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-72. Used oil burners are required to keep a record of each used oil shipment accepted for burning (40 CFR 279.60(a) and 279.65).</p> | <p>Verify that some form of record is kept that documents the following (5)(14)(15)(16)(17)</p> <ul style="list-style-type: none"> - name and address of the transporter who delivered the used oil - name and address of the generator or processor/re-refiner from whom the used oil was sent to the burner - USEPA ID No. of the transporter or, if applicable, the generator, or processor/re-refiner - quantity of used oil accepted - date of acceptance. <p>Verify that records are maintained for at least 3 yr. (5)(14)</p> <p>(NOTE: The following activities are exempt from these requirements:</p> <ul style="list-style-type: none"> - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.) |
| <p>7-73. Before a burner can accept the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide a one-time written notice (40 CFR 279.60(a) and 279.66).</p> | <p>Verify that the burner issued a notice to the USEPA, stating the location and description of the activity and certifying that the used oil will only be burned in an industrial furnace or boiler. (5)(14)(15)(16)(17)</p> <p>Verify that the certification is maintained for 3 yr from the date of the last shipment received. (5)(14)</p> <p>(NOTE: The following activities are exempt from these requirements:</p> <ul style="list-style-type: none"> - the burning of used oil by a generator in an onsite space heater - the burning of used oil by a processor/re-refiner for purposes of processing.) |
| <p>Marketing</p> | |
| <p>7-74. Used oil fuel marketers may only initiate a shipment of off-specification used oil to a used oil burner who has a USEPA ID No. and burns the used oil in an industrial furnace or boiler (40 CFR 279.70(b) and 279.71).</p> | <p>Determine if the facility is marketing off-specification used fuel oil. (5)(14)(15)</p> <p>Verify that it is going to an appropriate used oil burner. (5)(14)</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> - people who direct shipments of on-specification used oil and who are not the first to claim the oil is on-specification - used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from his or her facility to a used oil burner.) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>7-75. Generators, transporters, processors/re-refiners, or burners must determine if the fuel oil is off- or on-specification (40 CFR 279.70(b) and 279.72).</p> <p>...</p> <p>7-76. Used oil fuel marketers are required to have a USEPA ID No. (40 CFR 279.70(b) and 279.73).</p> <p>...</p> <p>7-77. Any used oil marketer that directs a shipment of used oil to a burner is required to keep specific records (40 CFR 279.70(b) and 279.74).</p> | <p>Verify that a determination as to whether the used oil fuel is off- or on-specification is made by analyses or by obtaining copies of other analyses. (5)(14)(15)</p> <p>Verify that records of analyses are maintained for 3 yr. (5)(14)</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> - people who direct shipments of on-specification used oil and who are not the first to claim the oil is on-specification - used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from his or her facility to a used oil burner.) <p>...</p> <p>Verify that the facility has a USEPA ID No. (5)(14)(15)</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> - people who direct shipments of on-specification used oil and who are not the first to claim the oil is on-specification - used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from his or her facility to a used oil burner.) <p>...</p> <p>Verify that records containing the following information are kept of each shipment of off-specification oil: (5)(14)(15)</p> <ul style="list-style-type: none"> - name and address of the transporter who delivers the used oil to the burner - name and address of the burner who will receive the used oil - USEPA ID No. of the burner - quantity of used oil shipped - date of shipment. <p>Verify that records containing the following information are kept of each shipment of on-specification oil: (5)(14)</p> <ul style="list-style-type: none"> - name and address of the facility receiving the shipment - quantity of used oil delivered - cross-reference to the record of used oil analysis - date of shipment. <p>Verify that records are maintained for 3 yr. (5)(14)</p> <p>(NOTE: These requirements do not apply to the following:</p> <ul style="list-style-type: none"> - people who direct shipments of on-specification used oil and who are not the first to claim the oil is on-specification - used oil generators and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from his or her facility to a used oil burner.) |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>7-78. Before used oil generators, transporters, or processors/re-refiners direct the first shipment of off-specification used oil to a burner, they must obtain a one-time written and signed notice from the burner (40 CFR 279.70(b) and 279.75).</p> <p align="center">...</p> | <p>Verify that notice from the burner has been received that indicates the burner notified the USEPA of the location and used oil management activities and that the burner will only burn off-specification oil in approved furnaces and boilers. (5)(14)</p> <p>Verify that a copy of the notice is kept for 3 yr from the date the last shipment of off-specification used oil was shipped to the burner. (5)(14)</p> <p align="center">...</p> |
| <p>Dust Suppression</p> <p>7-79. Used oil cannot be used for dust suppression unless allowed by the state (40 CFR 279.82).</p> | <p>Verify that used oil is not used for dust suppression at the facility. (5)(14)(15)(16)</p> |

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Appendix 7-1

Used Oil Classifications (40 CFR 279.10 and 279.11)

Used Oils Which Are Required to be Handled According to the Requirements in 40 CFR 279 (40 CFR 279.10(b)(2)(ii), 279.10(b)(2)(iii), 279.10(b)(3), 279.10(c)(2), 279.10(d), 279.10(e)(2), and 279.10(i)).

1. Used oil containing more than 1000 ppm of total halogens when the generator has demonstrated that the used oil does not contain hazardous waste.
2. Used metalworking oils/fluids containing chlorinated paraffins when they are recycled or disposed of and the generator has demonstrated that the used oil does not contain hazardous waste.
3. Used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units and the generator has demonstrated that the used oil does not contain hazardous waste.
4. Materials produced from used oil that are burned for energy recovery.
5. Mixtures of used oil and hazardous waste if the resultant mixture does not exhibit any characteristics of hazardous waste.
6. Mixtures of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability and is not a listed waste.
7. Mixtures of used oil and conditionally exempt small quantity generator (CESQG) hazardous waste.
8. Mixtures of used oil and fuels or other fuel products except those marked onsite by the generator for use in the generators own vehicles if the used oil and the diesel fuel have been mixed.
9. Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits:

| | | |
|----------------|------|-------------|
| Arsenic | 5 | ppm maximum |
| Cadmium | 2 | ppm maximum |
| Chromium | 10 | ppm maximum |
| Lead | 100 | ppm maximum |
| Flash Point | 100 | °F minimum |
| Total halogens | 4000 | ppm maximum |
10. Materials containing or otherwise contaminated with used oil that are burned for energy recovery.
11. Used oil drained or removed from materials containing or otherwise contaminated with used oil.
12. Used oil at marketers or burners with any quantifiable level of PCBs (the standards in 40 CFR 761.20(a) must also be met for this type of oil).

Appendix 7-1 (continued)

Used Oil that is Required to be Handled as a Hazardous Waste (40 CFR 279.10(b)).

1. Mixtures of used oil and listed hazardous waste.
2. Used oil containing more than 1000 ppm total halogens.
3. Used metalworking oils/fluids containing chlorinated paraffins if processed through a tolling agreement.
4. Used oil contaminated with CFCs removed from refrigeration units where the CFCs are destined for reclamation.
5. Mixtures of used oil and hazardous waste if the resultant mixture exhibits characteristics of a hazardous waste.

Used Oil that is not Subject to the Requirements of 40 CFR 279, Nor is it to be Handled as a Hazardous Waste Unless Testing Indicates Hazardous Constituents (40 CFR 279.10(c)(1), 279.10(d)(2), 279.10(e)(1), 279.10(e)(3), 279.10(e)(4), and 279.10(f) through 279.10(h)).

1. Mixtures of used oil and diesel fuel mixed onsite by the generator of the used oil for use in the generator's own vehicles.
2. Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal.
3. Materials derived from used oil that are disposed of or used in a manner constituting disposal.
4. Used Oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.
5. Wastewater discharges with de minimis quantities of used oil.
6. Used oil within a crude oil or natural gas pipeline.
7. Used oil on vessels.
8. Materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed so that no signs of visible free-flowing remains.

Section 8

Solid Waste Management

SECTION 8

SOLID WASTE MANAGEMENT

A. Applicability

This section addresses the collection, storage, and disposal of solid waste at U.S. Army Corps of Engineers (USACE) facilities.

Solid waste is considered to be nonhazardous trash, rubbish, garbage, bulky wastes, liquids, or sludges generated by any Corps facility's operations and activities. The handling and disposal of asbestos waste materials are addressed in Section 9, *Special Pollutants Management*. Recycling and resource recovery activities are included in this section.

This section does not address the requirements for new municipal solid waste landfills because few Corps facilities are operating active landfills. If the facility is operating a municipal solid waste landfill, please refer to the appropriate questions in the *U.S. Environmental Compliance Assessment System (ECAS)* manual.

B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA), Subtitle D of 1976*. This subtitle, as amended, Public Law (PL) 98-616 (42 U.S. Code (USC) 6941-6949a), establishes Federal standards for the management of nonhazardous solid wastes. The objectives of this subtitle are to assist in developing and encouraging methods for the disposal of solid waste that are environmentally sound and that maximize the use of valuable resources recoverable from solid waste. This subtitle also establishes the framework for Federal, state, and local government cooperation in controlling the management of nonhazardous solid waste (42 USC 6941).
- *The Solid Waste Disposal Act of 1965*. This law, as amended, requires that Federal facilities comply with all Federal, state, interstate, and local requirements concerning the disposal and management of solid wastes.
- *The Occupational Safety and Health Act (OSHA)*. The general purpose of this Act is to assure, as much as is possible, every individual working in the United States safe and healthful working conditions. The control of medical waste is one aspect of assuring safe and healthy working conditions.
- *Executive Order (EO) 12088*. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities

to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

- EO 12780, *Federal Agency Recycling and the Council on Federal Recycling and Procurement Policy*. This EO requires Federal agencies to promote cost-effective waste reduction and recycling of reusable materials from wastes generated at their activities. Federal agencies are required to initiate a program to promote cost-effective waste reduction through:
 1. practices that reduce waste generation, and
 2. the recycling of recyclable materials such as paper, plastic metals, glass, used oil, lead acid batteries, and tires, and the composting of organic materials such as yard waste.

C. State/Local Regulations

The Federal government set minimum national standards for municipal solid waste disposal in 40 Code of Federal Regulations (CFR) 258, but state and local governments are responsible for implementing and enforcing waste programs. States are required to develop their own programs based on the Federal regulations. Most states and municipalities have already developed their own regulations governing the permitting, licensing, and operations of landfills, incinerators, and source separation/ recycling programs.

States are required to incorporate revised criteria for municipal solid waste landfills (MSWLFs) into their permit programs and gain approval from the U.S. Environmental Protection Agency (USEPA). States that apply for and receive USEPA approval of their programs have the opportunity to provide a lot of flexibility in implementing the regulations. This flexibility allows states to take local conditions into account and gives them the authority to alter some of the requirements. Evaluators will need to determine if a state has been granted approval for the 40 CFR 258 program in order to accurately assess an installation's compliance with the criteria.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- DOD Directive 4165.60, *Solid Waste Management*. This directive outlines the policies and procedures concerning collection, disposal, resource recovery, and recycling of solid waste.

- Engineering Manual (EM) 385-1-1, *Safety and Health Requirements*. Although this is a manual and not an ER, the contents are applicable to all missions under the command of the Chief of Engineers, whether accomplished by military, civilian, or contractor forces. In relation to solid waste, it outlines handling and operating procedures.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- **Storage/Collection** - Facilities are required to store all solid wastes and materials separated for recycling so that it does not cause a fire, safety, or health hazard. All facilities are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation. All collection equipment is required to have a suitable cover to prevent spillage, and the equipment is to be constructed, operated, and maintained adequately. All facilities are required to collect solid wastes or materials, separated for recycling, according to a certain schedule, and in a safe, efficient manner (40 CFR 243.200-1, 243.201-1, 243.202-1(a) through 243.202-1(c), 243.203-1, and 243.204-1).
- **Solid Waste Containers** - A separate, covered, self-closing, nonflammable, non-reactive container must be provided for the collection of garbage and oily, flammable, and dangerous wastes, and the contents disposed of daily. Corps facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles. Household or commercial garbage, trash, rubbish debris, dead animals, or litter should not be brought on the project for dumping or disposal without permission from the District Engineer (EM 385-1-1, para 11.J.07 and GMP).
- **Recycling** - Corps facilities are required to participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical. Facilities with offices of over 100 office workers are required to recover high-grade paper. Facilities at which more than 500 families reside are required to recycle newspapers. Any facility generating 10 tons [10,160.47 kg] or more of waste corrugated containers per month are required to segregate or collect separately for recycling or alternate energy use (DOD Directive 4165.60 para V; 40 CFR 246.200-1 and 246.202-1).

- **Specific Wastes** - Bulky wastes must be disposed of according to certain methods, which differ depending of the variety of waste (i.e., automobile bodies, furniture and appliances are required to be salvaged, or crushed and pushed onto working face near the bottom of the cell). Water treatment plant sludges, containing no free moisture, and digested or heat treated wastewater treatment plant sludges must be disposed of by covering them with soil or municipal solid wastes. Incinerator and air pollution control residues must be disposed of by covering them as necessary to prevent their becoming airborne (40 CFR 241.200-3 and DOD Directive 4165.60 para V(a)).
- **Land Disposal Site Operations other than MSWLFs** - Facilities are required to place cover material at the end of each operating day. Land disposal sites that accept special wastes must have approval from the responsible agency. Facilities that operate land disposal sites are required to provide a list of excluded materials to regular users, to operate the sites in a manner that will protect water quality and air quality, and control decomposition gases and vectors. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner, and to be designed, constructed and operated to protect the health and safety of personnel. Land disposal site cover material is required to minimize fire hazards, infiltration of precipitation, odors and litter, control gas venting and vectors, discourage scavenging, and provide a pleasing appearance. Municipal solid waste and cover material must be compacted to the smallest practicable volume. The operators of land disposal sites are required to maintain records and monitoring data (40 CFR 241.200-3(a), 241.201-2, 241.201-3, 241.204-3, 241.205-3, 241.206-241.211, and 241.212-3(a)).
- **Land Disposal Site Closure** - Upon closure of a site, a detailed description is required to be recorded with the area's land recording authority. Facilities should survey for and be aware of old disposal sites at the facility (40 CFR 241.212-3(b)).
- **New Landfills other than MSWLFs** - New landfills are required to meet certain location and design criteria, which include evaluation of hydrogeology and on-site soil characteristics, and verification of easy access to vehicles. Plans for the design, construction, and operation of new sites or modification to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.202-2 and 241.203-1).
- **Medical Waste** - Contaminated reusable sharps and other regulated wastes are required to be placed in puncture-resistant, color-coded, leakproof containers, as soon as possible after use until properly reprocessed. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping, and specific labeling and handling requirements are to be followed (29 CFR 1910.1030(d)).

- **Medical Waste Containers** - All bins, cans, and other receptacles intended for reuse that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis. Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards, which include the biohazard symbol, and being colored a fluorescent orange with contrasting-colored lettering and symbols (29 CFR 1910.1030(d)(4)(ii)(c) and 1910.1030(g)(1)(i)).

F. Key Compliance Definitions

- *Active Life* - the period of operation beginning with the initial receipt of solid waste and ending with the completion of closure activities (40 CFR 258.2).
- *Active Portion* - that part of a facility or unit that has received, or is receiving, wastes and that has not been closed (40 CFR 258.2).
- *Aquifer* - a geological formation, group of formations, or a portion of a formation capable of yielding significant quantities of groundwater to wells or springs (40 CFR 258.2).
- *Blood* - human blood, human blood components, and products made from human blood (29 CFR 1910.1030(a)).
- *Bottom Ash* - the solid material that remains on a hearth or falls off the grate after thermal processing is complete (40 CFR 240.101(b)).
- *Bulky Wastes* - large items of solid waste such as household appliances, furniture, large auto parts, trees, branches, stumps, and other oversize wastes which large size precludes or complicates their handling by normal solid waste collection, processing, or disposal methods (40 CFR 243.101).
- *Cell* - compacted solid wastes that are enclosed by natural soil or cover material in a land disposal site (40 CFR 241.101).
- *Collection* - the act of removing solid waste (or materials which have been separated for the purpose of recycling) from a central storage point (40 CFR 243.101).
- *Commercial Solid Waste* - all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes (40 CFR 243.101).

- *Construction and Demolition Wastes* - waste building materials, packaging, and rubble resulting from the construction, renovation, repair, and demolition operation on pavements, houses, commercial buildings, and other structures (40 CFR 243.101).
- *Contaminated* - the presence, or the reasonably anticipated presence, of blood or other potentially infectious materials on an item or surface (29 CFR 1910.1030(a)).
- *Contaminated Sharps* - any contaminated object that can penetrate the skin, including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires (29 CFR 1910.1030(a)).
- *Corrugated Container Waste* - discarded corrugated boxes (40 CFR 246.101).
- *Cover Material* - soil or other suitable material that is used to cover compacted solid wastes in a land disposal site (40 CFR 241.101).
- *Daily Cover* - cover material that is spread and compacted on the top and side slopes of compacted solid wastes, at least at the end of each operating day, in order to control vectors, fire, moisture, and erosion, and to assure an aesthetic appearance (40 CFR 241.101).
- *Decontamination* - the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface of the item is rendered safe for handling, use, or disposal (29 CFR 1910.1030(a)).
- *Design Capacity* - the weight of solid waste of a specified gross calorific value that a thermal processing facility is designed to process in 24 h of continuous operation (40 CFR 240.101(d)).
- *Existing MSWLF* - any MSWLF unit that is receiving solid wastes as of 9 October 1993 (40 CFR 258.2).
- *Final Cover* - cover materials that serve the same function as daily cover but, in addition, may be permanently exposed on the surface (40 CFR 241.101).
- *Fly Ash* - suspended particles, charred paper, dust, soot, and other partially oxidized matter carried in the products of combustion (40 CFR 240.101).
- *Food Waste* - the organic residues generated by the handling, storage, sale, preparation, cooking, and serving of foods, commonly called garbage (40 CFR 243.101).

- *Garbage* - in relation to solid waste coming from outside the continental United States, it is all waste material derived in whole or in part from fruits, vegetables, meats, or other plant or animal material, and other refuse of any character whatsoever that has been associated with any such material on board any means of conveyance, and including food scraps, table refuse, galley refuse, food wrappers, or packaging materials, and other waste materials from stores, food preparation areas, passengers; or crews quarters, dining rooms, or any other areas or means of conveyance. It also means meals and other food that were available for consumption by passengers and crew on an aircraft, but were not consumed (7 CFR 330.400(b)).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Groundwater* - water present in the unsaturated zone of an aquifer (40 CFR 241.101).
- *High-grade Paper* - letterhead, dry copy papers, miscellaneous business forms, stationary, typing paper, tablet sheets, and computer printout paper and cards, commonly sold as *white ledger computer printout* and *tab card* grades by the wastepaper industry (40 CFR 246.101).
- *Household Waste* - any solid waste, (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use-recreation areas) (40 CFR 258.2).
- *Industrial Solid Waste* - the solid waste generated by industrial processes and manufacturing that is not a hazardous waste (40 CFR 243.101).
- *Infectious Waste* -
 1. equipment, instruments, utensils, and fomites of a disposable nature from the rooms of patients who are suspected to have or have been diagnosed as having a communicable disease and must, therefore, be isolated as required by public health agencies
 2. laboratory wastes such as pathological specimens and disposable fomites (any substance that may harbor or transmit pathological organisms)
 3. surgical operating room pathological specimens and disposable fomites attendant thereto and similar disposable materials from outpatient areas and emergency rooms (40 CFR 240.101).
- *Institutional Solid Waste* - solid wastes generated by educational, health care, correctional, and other institutional facilities (40 CFR 243.101).

- *Intermediate Cover* - cover material that serves the same function as daily cover but must resist erosion for a longer period of time because it is applied in areas where additional cells are not to be constructed for extended periods of time (40 CFR 241.101).
- *Leachate* - liquid that has percolated through solid waste and has extracted dissolved or suspended materials from it (40 CFR 241.101).
- *Medical/Pathological Wastes* - any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. This does not include hazardous waste or household waste (40 CFR 259.10).
- *Municipal Solid Waste* - residential and commercial solid wastes generated within a community (40 CFR 240.101).
- *Municipal Solid Waste Landfill (MSWLF) Unit* - a discrete area of land or an excavation that received household waste and that is not a land application unit, surface impoundment, injection well, or waste pile. It may also receive other types of RCRA-D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste and industrial solid waste. Such a landfill may be publicly or privately owned. An MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion (40 CFR 258.2).
- *New MSWLF* - any MSWLF unit that has not received waste prior to 9 October 1993 (40 CFR 258.2).
- *Open Burning* - burning of solid wastes in the open, such as in an open dump (40 CFR 240.101(r)).
- *Open Dump* - a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers (40 CFR 240.101).
- *Recoverable Resource* - materials that still have useful physical, chemical, or biological properties after serving their original purpose and can, therefore, be reused or recycled for the same or other purposes (40 CFR 245.101).
- *Recycled Material* - a material that is utilized in place of a primary, raw, or virgin material in manufacturing a product (40 CFR 245.101).
- *Recycling* - the process by which recovered materials are transformed into new products (40 CFR 245.101).

- *Regulated Wastes* - liquid or semiliquid blood or other potentially infectious materials, and/or contaminated items that would release blood or other potentially infectious materials in a liquid or semiliquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials (29 CFR 1910.1030(a)).
- *Residential Solid Waste* - the wastes generated by the normal activities of households, including, but not limited to, food wastes, rubbish, ashes, and bulky wastes (40 CFR 243.101).
- *Resource Recovery Facility* - any physical plant that processes residential, commercial, or institutional solid waste biologically, chemically, or physically, and recovers useful products (40 CFR 245.101).
- *Runoff* - the portion of precipitation that drains from an area as surface flow (40 CFR 241.101).
- *Sanitary Landfill* - a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day (40 CFR 240.101).
- *Separate Collection* - collecting recyclable materials which have been separated at the point of generation and keeping those materials separated from other collected solid waste in separate compartments of a single collection vehicle or through the use of separate collection vehicles (40 CFR 246.101).
- *Sludge* - the accumulated semiliquid suspension of settled solids deposited from wastewaters or other fluids in tanks or basins (40 CFR 240.101).
- *Solid Waste* - garbage, refuse, sludge, and other discarded solid materials resulting from industrial and commercial operations and from community activities. It does not include solids or dissolved materials in domestic sewage or other significant pollutants in water resources (40 CFR 240.101).
- *Source Separation* - the setting aside of recyclable materials at their point of generation by the generator (40 CFR 246.101).
- *Special Wastes* - nonhazardous solid wastes requiring handling other than that normally used for municipal solid wastes (40 CFR 240.101).

- *Thermal Processing* - processing of waste material by means of heat (40 CFR 240.101).
- *Transfer Station* - a station at which solid wastes are concentrated for transport to a processing facility or land disposal site. A transfer station may be fixed or mobile (40 CFR 243.101).
- *Universal Precautions* - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens (29 CFR 1910.1030(a)).
- *Vector* - a carrier, usually an arthropod, that is capable of transmitting a pathogen from one organism to another (40 CFR 240.202).
- *Working Face* - that portion of the land disposal site where solid wastes are discharged and are spread and compacted prior to the placement of cover material (40 CFR 241.101).

SOLID WASTE MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|---|---------------------------------|--|
| All Facilities | 8-1 through 8-3 | (5)(8) |
| Storage/Collection | 8-4 through 8-16 | (5)(8)(15)(16)(17) |
| Recycling | 8-17 through 8-20 | (5)(15)(16)(17) |
| Land Disposal Sites Other Than MSWLFs Specific Wastes | 8-21 through 8-24 | (5)(8)(15)(16)(17) |
| Land Disposal Sites Other Than MSWLFs Operations | 8-25 through 8-43 | (5)(8)(15)(16)(17) |
| Closure | 8-44 and 8-45 | (5)(8)(15)(16)(17) |
| Site Criteria For New Landfills Other Than MSWLFs | 8-46 through 8-48 | (5)(8)(15)(16) |
| Medical Waste | 8-49 through 8-54 | (5)(15)(16)(17) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural / Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

SOLID WASTE MANAGEMENT

Records to Review

- Record of current nonhazardous solid waste management practices
- Documentation of locations (map) and descriptions of all nonhazardous waste treatment, storage, and disposal facilities (TSDFs)
- Records of operational history of all active and inactive TSDFs
- State and Federal inspection reports
- Environmental monitoring procedures or plans
- Records of resource recovery practices, including the sale of materials for the purpose of recycling
- Solid waste removal contracts and inspection records
- Operating records for onsite landfills

Physical Features to Inspect

- Resource recovery facilities
- Incineration and land disposal facilities (active and inactive)
- Areas where nonhazardous waste is disposed
- Construction debris areas
- Waste receptacles
- Solid waste vehicle storage and washing areas
- Compost facilities
- Transfer stations
- Recycling centers

People to Interview

- Environmental Compliance Coordinator (ECC)
- Safety and Occupational Health Office
- Project Resource Manager
- Facility Managers
- Lab Manager

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. This chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist item numbers in the April 1993 ERGO Manual | Corresponding Checklist Items Numbers in the 1994 ERGO Manual |
|---|--|
| 8-1 through 8-9 | 8-1 through 8-9 |
| 8-10 | deleted |
| no match | 8-10 through 8-12 |
| 8-11 through 8-18 | 8-13 through 8-20 |
| no match | 8-21 |
| 8-19 | 8-22 |
| 8-20 and 8-24 | 8-23 and 8-27 |
| 8-25 | 8-28 and 8-29 |
| 8-26 | 8-30 |
| 8-27 | 8-31 and 8-32 |
| 8-28 and 8-29 | 8-33 and 8-34 |
| 8-30 | 8-35 through 8-37 |
| 8-31 | 8-38 and 8-39 |
| 8-32 | 8-40 and 8-41 |
| 8-33 | 8-42 and 8-43 |
| 8-34 and 8-35 | 8-44 and 8-45 |
| 8-36 | 8-46 and 8-47 |
| 8-37 through 8-43 | 8-48 through 8-54 |

| | | | |
|-------------------------|--|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: SOLID WASTE MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

**COMPLIANCE CATEGORY:
SOLID WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>ALL FACILITIES</p> <p>8-1. Determine actions or changes since previous review on solid waste management (GMP).</p> <p>...</p> <p>8-2. The facility should have access to a current file of applicable Federal, engineering, and state regulations (GMP).</p> <p>...</p> | <p>Determine if noncompliance issues were resolved by examining a copy of the previous review report. (5)(8)</p> <p>...</p> <p>Determine if the following regulations are maintained at the facility or district or division office: (5)(8)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance With Pollution Control Standards</i>. - 29 CFR 1910.1030, <i>Bloodborne Pathogens</i>. - 40 CFR 241, <i>Guidelines For The Land Disposal of Solid Wastes</i>. - 40 CFR 243, <i>Guidelines For The Storage and Collection of Residential, Commercial, and Institutional Solid Waste</i>. - 40 CFR 246, <i>Source Separation For Materials Recovery Facilities Guidelines</i>. - DOD Directive 4165.60, <i>Solid Waste Management</i>, 4 October 1976. - EM 385-1-1, <i>Safety and Health Requirements Manual</i>, October 1992. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - Applicable state and local regulations. <p>(NOTE: A consolidated listing of approved test methods should also be maintained at the facility (<i>Test Methods for Evaluating Solid Waste, Physical/Chemical Methods</i>, USEPA Publication SW-846, Document No. PB87-120-291).)</p> <p>...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
SOLID WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>8-3. Facilities are required to comply with state and local solid waste regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> | <p>Verify that the facility is complying with state and local solid waste requirements. (5)(8)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)(8)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - license or permit requirements for existing onsite landfills - requirements for filing a closure plan for onsite landfills, specifying monitoring and inspection procedures - design and operation specifications for solid waste receptacles - disposal of solid waste offsite only at licensed or permitted facilities - design and policy procedures of thermal processing of solid waste - analysis for hazardous properties of ash residues and sludge from air pollution control devices at coal-fired installation heating plant operations before sale or disposal - handling and disposal of medical, pathological, and infectious waste - recycling requirements - disposal of household wastes - yard waste - disposal of used tires.) |
| <p>STORAGE/ COLLECTION</p> <p>8-4. Facilities are required to store all solid wastes and materials separated for recycling according to specific guidelines (40 CFR 243.200-1 and EM 385-1-1, para 14.D.01).</p> | <p>(NOTE: Federal agencies that have decided not to adopt the requirements contained in 40 CFR 243 are required to provide a report of the analysis and rationale used.)</p> <p>Verify that all solid wastes are stored so as not cause a fire, health, or safety hazard. (5)(15)(16)(17)</p> <p>Verify that all solid waste containing food wastes are stored in covered or closed containers that are nonabsorbent, leakproof, durable, easily cleaned, and designed for safe handling. (5)(15)(16)(17)</p> <p>Verify that solid waste containers are of an adequate size and number to contain all waste generated between collections. (5)(15)(16)(17)</p> <p>Verify that bulky wastes are stored so as not to create a nuisance and to avoid the accumulation of solid waste and water in and around the bulky items. (5)(15)(16)(17)</p> <p>Verify that reusable containers are capable of being serviced without the collector coming into contact with the waste. (5)(15)(16)(17)</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
SOLID WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>8-5. All facilities are required to operate their collection systems in a manner to protect the health and safety of personnel associated with the operation (40 CFR 243.201-1).</p> <p style="text-align: center;">...</p> | <p>Verify that the collection system is operated safely. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-6. Facilities are required to maintain collection equipment according to certain standards if such equipment is considered to be operating in interstate or foreign commerce (40 CFR 243.202-1(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that all vehicles used for the collection and transportation of solid waste meet all applicable standards established by the Federal Government including: (15)(16)(17)</p> <ul style="list-style-type: none"> - <i>Motor Carrier Safety Standards</i> (49 CFR 390 through 396) - <i>Noise Emission Standards for Motor Carriers Engaged in Interstate Commerce</i> (40 CFR 202) - <i>Federal Motor Vehicle Safety Standards</i> (49 CFR 500 through 580) (Federally owned collection equipment only). <p style="text-align: center;">...</p> |
| <p>8-7. All collection equipment is required to meet specific criteria (40 CFR 243.202-1(b) and 243.202-1(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that all vehicles used for collection and transportation of solid wastes or materials, separated for recycling, are enclosed and have suitable cover to prevent spillage. (15)(16)(17)</p> <p>Verify that equipment used in the compaction, collection, and transportation of solid waste or materials, separated for recycling, are constructed, operated, and maintained adequately. (15)(16)(17)</p> <p>Verify that the following types of equipment meet that standards established by the American National Standards Institute (ANSI): (15)(16)(17)</p> <ul style="list-style-type: none"> - rear-loading compaction equipment - side-loading compaction equipment - front-loading compaction equipment - tilt-frame equipment - hoist-type equipment - satellite vehicles - special collection compaction equipment - stationary compaction equipment. <p style="text-align: center;">...</p> |
| <p>8-8. All facilities are required to collect solid wastes or materials, separated for recycling, according to a certain schedule (40 CFR 243.203-1).</p> | <p>Verify that solid wastes that contain food wastes are collected at a minimum of once during each week. (15)(16)(17)</p> <p>Verify that bulky wastes are collected at a minimum of once every 3 mo (15)(16)(17)</p> <p>Verify that all wastes are collected with sufficient frequency to inhibit the propagation or attraction of vectors and the creation of nuisances. (15)(16)(17)</p> |

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| <p>8-9. Facilities are required to collect solid wastes in a safe, efficient manner (40 CFR 243.204-1).</p> <p>...</p> | <p>Verify that solid wastes or materials, separated for recycling, are collected in a safe efficient manner. (15)(16)(17)</p> <p>Verify that the collection vehicle operator immediately cleans up any spillage caused by his operations. (15)(16)(17)</p> <p>...</p> |
| <p>8-10. An adequate number of receptacles are required to be provided in food service areas (EM 385-1-1, para 02.D.04).</p> <p>...</p> | <p>Verify that an adequate number of receptacles are provided to contain food waste in food service areas. (15)(16)</p> <p>Verify that receptacles are constructed of corrosion resistant or disposal material and have solid, tight-fitting covers. (15)(16)</p> <p>(NOTE: Covers may be omitted if sanitary conditions can be maintained without them.)</p> <p>Verify that containers are emptied at least daily and maintained in a sanitary condition. (15)(16)</p> <p>...</p> |
| <p>8-11. Receptacles for putrescible or dangerous waste materials are required to be constructed and maintained according to specific parameters (EM 385-1-1, para 02.E.01).</p> <p>...</p> | <p>Verify that putrescible and dangerous waste containers are constructed to prevent leakage, have a tight-fitting cover, and allow through cleaning and sanitary maintenance. (15)(16)(17)</p> <p>(NOTE: Covers may be omitted if sanitary conditions can be maintained without them.)</p> <p>...</p> |
| <p>8-12. Paint scrapings and paint-saturated debris are required to be removed from the premises on a daily basis (EM 385-1-1, para 09.A.12).</p> <p>...</p> | <p>Verify that when painting and paint scraping is being done, the paint scrapings and paint saturated debris is removed from the premises on a daily basis. (15)(16)(17)</p> <p>...</p> |
| <p>8-13. A separate, covered, nonreactive, self-closing, nonflammable container must be provided for the collection of garbage, oily, flammable, and dangerous wastes and the contents disposed of daily (EM 385-1-1, para 14.D.04).</p> <p>...</p> | <p>Verify that receptacles are located in work areas and are emptied daily. (15)(16)(17)</p> <p>Verify that the containers are labeled with a description of contents. (15)(16)(17)</p> <p>...</p> |

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| <p>8-14. Corps industrial shop waste receptacles should be inspected quarterly to verify that hazardous wastes are not being deposited (GMP).</p> <p>...</p> | <p>Verify that receptacles were inspected by reviewing records and interviewing personnel. (8)(15)(16)(17)</p> <p>Verify that corrective actions were taken where indicated. (8)(15)(16)(17)</p> <p>Verify, by a visual check, that hazardous waste is not present in the solid waste receptacles at shops. (8)(15)(16)(17)</p> <p>...</p> |
| <p>8-15. Corps facility personnel should be periodically informed about materials that are prohibited from disposal in solid waste receptacles (GMP).</p> <p>...</p> | <p>Verify that a program exists at the facility to keep personnel informed about proper waste disposal practices. (15)(16)(17)</p> <p>...</p> |
| <p>8-16. Household or commercial garbage, trash, rubbish, debris, dead animals, or litter should not be brought onto the project for dumping or disposal without permission from the District Engineer (GMP).</p> <p>...</p> | <p>Verify that the project is surveyed for improperly disposed items. (15)(16)(17)</p> <p>Verify that unknown waste is tested for hazardous constituents. (15)(16)(17)</p> <p>...</p> |
| <p>RECYCLING</p> | |
| <p>8-17. Corps facilities are required to participate in any state or local recycling programs and reduce the volume of solid waste materials at the source whenever practical (DOD Directive 4165.60, para V(a), V(c), and V(h)).</p> <p>...</p> | <p>Verify that solid waste reduction program exists. (5)(15)(16)(17)</p> <p>Verify that recycling programs are in compliance with applicable state or local requirements. (15)(16)(17)</p> <p>Verify that reusable or marketable materials are collected at regular intervals. (15)(16)(17)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>8-18. Facilities with offices of over 100 office workers are required to recover high-grade paper (40 CFR 246.200-1 and DOD Directive 4165.60, para V(l)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has over 100 office workers. (15)(16)(17)</p> <p>Verify that high-grade paper is separated at the source of generation. (15)(16)(17)</p> <p>Verify that high-grade paper is separately collected. (15)(16)(17)</p> <p>Verify that high-grade paper is recycled. (15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-19. Facilities at which more than 500 families reside are required to recycle newspapers (40 CFR 246.201-1 and DOD Directive 4165.60, para V(k)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has more than 500 families residing on it. (5)(15)(16)(17)</p> <p>Verify that used newspapers are separated at the source of generation. (5)(15)(16)(17)</p> <p>Verify that used newspapers are separately collected. (5)(15)(16)(17)</p> <p>Verify that used newspapers are sold for recycling. (5)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-20. Any facility generating 10 tons [10,160.47 kg] or more of waste corrugated containers per month are required to segregate/ separately collect for recycling or alternate energy use (40 CFR 246.202-1).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility generates 10 tons [10,160.47 kg] or more of waste corrugated containers per month. (5)(15)(16)(17)</p> <p>Verify that waste corrugated containers are collected separately. (5)(15)(16)(17)</p> <p>Verify that waste corrugated containers are recycled or used for alternate energy. (5)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>LAND DISPOSAL SITES OTHER THAN MSWLFs</p> <p>Specific Wastes</p> <p>8-21. Facilities are required to identify what wastes can and cannot be accepted at the facility in conjunction with the responsible agency (40 CFR 241.200-1).</p> <p style="text-align: center;">...</p> | <p>Verify that the facility has specifically identified what wastes can and cannot be accepted for disposal at the site. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>8-22. Bulky wastes should be disposed of according to certain methods (GMP).</p> <p>...</p> | <p>Verify that automobile bodies, furniture, and appliances are either salvaged or crushed and pushed onto the working face near the bottom of the cell. (5)(8)(15)(16)(17)</p> <p>Verify that demolition and construction debris, tree stumps, and large timbers are pushed onto the working face near the bottom of the cell. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241-200-3(b).)</p> <p>...</p> |
| <p>8-23. Water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges should be disposed of according to certain methods (GMP).</p> <p>...</p> | <p>Verify that water treatment plant sludges containing no free moisture and digested or heat treated wastewater treatment plant sludges are covered with soil or municipal solid wastes. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.200-3(d).)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>8-24. Incinerator and air pollution control residues should be disposed of according to certain methods (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that incinerator and air pollution control residues are incorporated into the face and covered as necessary to prevent them from becoming airborne. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.200-3(e).)</p> <p style="text-align: center;">...</p> |
| <p>LAND DISPOSAL SITES OTHER THAN MSWLFs</p> | |
| <p>Operations</p> | |
| <p>8-25. Facilities should place cover material at the end of each operating day (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that cover material is put in place daily by arriving at the site before it opens. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations in 40 CFR 241.200-3(a).)</p> <p style="text-align: center;">...</p> |
| <p>8-26. Using information from the generation sources on the installation, the disposal facility operator and the responsible agency are required to determine specific wastes that are excluded from disposal and identify them in plans (40 CFR 241.201-1).</p> <p style="text-align: center;">...</p> | <p>Verify that the disposal facility has designated what wastes are excluded from disposal at the site. (5)(8)(15)(16)(17)</p> <p>Verify that the list of excluded wastes is documented in a plan. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-27. Installations that operate land disposal sites should provide a list of excluded materials to regular users (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that a list of excluded materials is displayed prominently at the site entrance. (5)(8)(15)(16)(17)</p> <p>Verify that a list of excluded materials is given to all regular users of the site.</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.201-3.)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>8-28. The location, construction, and design of land disposal sites are required to meet the most stringent of applicable water quality standards and/or be constructed, located, designed, and operated in a manner to provide adequate protection to ground and surface water used as drinking water supplies (40 CFR 241.204-1).</p> <p style="text-align: center;">...</p> | <p>Verify that applicable water quality standards are met and that ground water and surface water used as drinking water supplies are protected. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-29. Land disposal sites should be operated in a manner which will protect water quality (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that surface water course and runoff are diverted from the land disposal site. (5)(8)(15)(16)(17)</p> <p>Verify that the land disposal site is constructed and graded to promote rapid surface water runoff without excessive erosion. (5)(8)(15)(16)(17)</p> <p>Verify that regrading is done as necessary to avoid ponding of precipitation and to maintain cover material integrity. (5)(8)(15)(16)(17)</p> <p>Verify that siltation or retention basins or other approved methods of retarding runoff are used where necessary to avoid stream siltation or flooding problems. (5)(8)(15)(16)(17)</p> <p>Verify that leachate collection and treatment systems are used where necessary to protect groundwater and surface water resources. (5)(8)(15)(16)(17)</p> <p>Verify that municipal solid wastes and leachate are not in contact with groundwater or surface water. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.204-3.)</p> <p style="text-align: center;">...</p> |
| <p>8-30. Land disposal sites should operate in a manner which will protect air quality (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that there is no open burning of municipal solid wastes. (5)(8)(15)(16)(17)</p> <p>Verify that dust control measures are initiated as necessary. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.205-3.)</p> <p style="text-align: center;">...</p> |

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| <p>8-31. Land disposal sites are required to control decomposition gases as necessary to avoid posing a hazard to occupants of adjacent property (40 CFR 241.206-1).</p> <p style="text-align: center;">...</p> | <p>Verify that land disposal sites are controlling decomposition gases. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-32. Land disposal sites should control decomposition gases according to the following recommended procedures (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that decomposition gases are not allowed to migrate laterally from the land disposal site. (5)(8)(15)(16)(17)</p> <p>Verify that decomposition gases do not pose an explosion or toxicity hazard. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.206-3.)</p> <p style="text-align: center;">...</p> |
| <p>8-33. Land disposal sites are required to control vectors (40 CFR 241.207-1).</p> <p style="text-align: center;">...</p> | <p>Verify that conditions are maintained that are unfavorable for the harboring, feeding, and breeding of vectors. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-34. Land disposal sites are required to be designed and operated in an aesthetically acceptable manner (40 CFR 241.208-1).</p> <p style="text-align: center;">...</p> | <p>Verify that the disposal site is designed and operated in an aesthetically acceptable manner. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| <p>8-35. For the land disposal site to be aesthetically acceptable, specific practices should be followed (GMP).</p> <p>...</p> | <p>Verify that blowing litter is controlled through portable litter fences or other devices. (5)(8)(15)(16)(17)</p> <p>Verify that wastes that are easily moved by wind are covered as necessary to prevent their becoming airborne. (5)(8)(15)(16)(17)</p> <p>Verify that onsite vegetation is cleared only as necessary. (5)(8)(15)(16)(17)</p> <p>Verify that natural windbreaks are maintained. (5)(8)(15)(16)(17)</p> <p>Verify that buffer strips and/or berms are used to screen the site from nearby residences and major roadways. (5)(8)(15)(16)(17)</p> <p>Verify that salvage material is removed from the site frequently. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 208-3.)</p> <p>...</p> |
| <p>8-36. Land disposal site cover material must meet certain criteria (40 CFR 241.209-1).</p> <p>...</p> | <p>Verify that cover material is applied as necessary to: (5)(8)(15)(16)(17)</p> <ul style="list-style-type: none"> - minimize fire hazards - minimize infiltration of precipitation - minimize odors - minimize blowing litter - control gas venting - control vectors - discourage scavenging - provide a pleasing appearance. <p>...</p> |
| <p>8-37. Cover material should be applied according to specific recommendations (GMP).</p> | <p>Verify that cover material is applied daily regardless of weather. (5)(8)(15)(16)(17)</p> <p>Verify that the thickness of the compacted daily cover is no less than 6 in. [15.24 cm]. (5)(8)(15)(16)(17)</p> <p>Verify that intermediate cover is applied on areas where additional cells are not to be constructed for extended periods of time. (5)(8)(15)(16)(17)</p> <p>Verify that final cover is applied on each area as it is completed or if the area is to remain idle for over 1 yr. (5)(8)(15)(16)(17)</p> <p>Verify that the surface grade promotes surface water runoff without erosion to minimize infiltration. (5)(8)(15)(16)(17)</p> <p>Verify that intermediate cover is at least 1 ft [0.30 m] thick and final cover is at least 2 ft [0.61 m] thick. (5)(8)(15)(16)(17)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 209-3.)</p> |

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| <p>8-38. Municipal solid waste and cover material must be compacted to the smallest practicable volume (40 CFR 241.210-1).</p> <p style="text-align: center;">...</p> | <p>Verify that the solid waste and cover material is compacted to the smallest practicable volume. (5)(8)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>8-39. Compaction of wastes and cover materials should be done according to recommended procedures (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that on an operating day municipal solid waste handling equipment is capable of performing the following functions: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - spread solid waste in layers no more than 2 ft [0.61 m] thick, while confining it to the smallest practicable area - compact the spread solid wastes to the smallest practicable volume - place, spread, and compact the cover material daily. <p>(NOTE: This GMP is based on recommendations found in 40 CFR 214.210-2.)</p> <p style="text-align: center;">...</p> |
| <p>8-40. Land disposal sites are required to be designed, constructed, and operated to protect the health and safety of personnel (40 CFR 241.211-1).</p> <p style="text-align: center;">...</p> | <p>Verify that the health and safety of personnel are a consideration in the design, construction, and operation of the site. (5)(8)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>8-41. Specific health and safety procedures should be followed in order to protect personnel at land disposal sites (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that a safety manual is available to employees. (5)(8)(15)(16)</p> <p>Verify that personal safety devices, such as hearing and eye protection, are provided to facility employees. (5)(8)(15)(16)</p> <p>Verify that equipment is provided with safety devices. (5)(8)(15)(16)</p> <p>Verify that provisions to extinguish fires exist. (5)(8)(15)(16)</p> <p>Verify that communications equipment is available onsite. (5)(8)(15)(16)</p> <p>Verify that scavenging is prohibited. (5)(8)(15)(16)</p> <p>Verify that access to the site is controlled. (5)(8)(15)(16)</p> <p>Verify that traffic signs or markers are provided to promote an orderly traffic pattern to and from the discharge area. (5)(8)(15)(16)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.211-2 and 241.211-3.)</p> <p style="text-align: center;">...</p> |

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| <p>8-42. Operators of land disposal sites are required to maintain records and monitoring data to be provided, upon request, to the responsible agency (40 CFR 241.212-1).</p> <p>...</p> | <p>Verify that required records are available. (5)(8)(15)(16)</p> <p>...</p> |
| <p>8-43. Records being maintained at land disposal site should cover specific topics (GMP).</p> <p>...</p> | <p>Verify that records are maintained and cover at least: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - major operational problems, complaints, or difficulties - results of leachate sampling and analyses - results of gas sampling and analyses - results of groundwater and surface water quality sampling and analyses upstream and downstream of the site - vector control efforts - dust and litter control efforts - quantitative measurements of the solid wastes handled - description of solid waste materials received. <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.212-3(a).)</p> <p>...</p> |
| <p>LAND DISPOSAL SITES OTHER THAN AN MSWLF</p> | |
| <p>Closure</p> | |
| <p>8-44. Upon closure of a site, a detailed description should be recorded with the area's land recording authority (GMP).</p> <p>...</p> | <p>Verify that, upon closure of a site, a detailed description is recorded with the area's land recording authority. (5)(8)(15)(16)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.212-3(b).)</p> <p>...</p> |
| <p>8-45. Facilities should be aware of sites where hazardous waste was disposed of at the facility (GMP).</p> <p>...</p> | <p>Determine if there are any old disposal sites by interviewing personnel. (5)(8)(15)(16)(17)</p> <p>Determine if a records review has been done to identify former disposal sites. (5)(8)(15)(16)(17)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>SITE CRITERIA FOR NEW LANDFILLS OTHER THAN MSWLFs</p> <p>8-46. Site selection and utilization are required to be consistent with public health and welfare, and air and water quality standards, and adaptable to appropriate land-use plan (40 CFR 241.202-1).</p> <p>...</p> <p>8-47. New landfills should meet certain location and design criteria (GMP).</p> <p>...</p> <p>8-48. Plans for the design, construction, and operation of new sites or modifications to existing sites are required to be prepared or approved by a professional engineer (40 CFR 241.203-1).</p> <p>...</p> | <p>Verify that the site and utilization are consistent with public health and welfare and other necessary environmental standards. (5)(8)(15)(16)</p> <p>...</p> <p>Verify that the hydrogeology of the site has been evaluated. (5)(8)(15)(16)</p> <p>Verify that onsite soil characteristics have been evaluated. (5)(8)(15)(16)</p> <p>Verify that environmental factors, climatological conditions, and socioeconomic factors have been considered in site selection. (5)(8)(15)(16)</p> <p>Verify that the site is easily accessible to vehicles. (5)(8)(15)(16)</p> <p>Verify that the site location will not attract birds and pose a hazard to low-flying aircraft. (5)(8)(15)(16)</p> <p>(NOTE: This GMP is based on recommendations found in 40 CFR 241.202-2.)</p> <p>...</p> <p>Verify that plans have been prepared or approved by a professional engineer. (5)(8)(15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>MEDICAL WASTE</p> <p>8-49. Contaminated reusable sharps are required to be placed in containers that meet specific requirements as soon as possible after use until properly reprocessed (29 CFR 1910.1030(d)(2)(viii) and 1910.1030(d)(4)(ii)(E)).</p> <p>...</p> <p>8-50. Specimens of blood or other potentially infectious material are required to be placed in a container that prevents leakage during collection, handling, processing, storage, transport, or shipping and specific labeling and handling requirements are followed (29 CFR 1910.1030(d)(2)(xiii)).</p> <p>...</p> | <p>Verify that contaminated reusable sharps are placed in containers that are: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - puncture resistant - labeled or color coded - leakproof on the sides and bottom. <p>Verify that reusable sharps that are contaminated with blood or other potentially infectious materials are not stored or processed in a manner that requires employees to reach by hand into the containers. (5)(15)(16)(17)</p> <p>...</p> <p>Verify that containers are: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - labeled and color coded - closed prior to being stored, transported, or shipped. <p>(NOTE: When the facility utilizes Universal Precautions in the handling of all specimens, the labeling/color coding of specimens is not necessary if the containers are recognizable as containing specimens.)</p> <p>Verify that if outside contamination of the primary container occurs, it is placed in a second container. (5)(15)(16)(17)</p> <p>Verify that if the specimens could puncture the primary container, the primary container is placed in a secondary container that is puncture resistant. (5)(15)(16)(17)</p> <p>...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
SOLID WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>8-51. Contaminated sharps are required to be discarded immediately in containers meeting specific requirements (29 CFR 1910.1030(d)(4)(iii)(A)).</p> | <p>Verify that contaminated sharps are placed in containers that are: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - closable - puncture resistant - leakproof on sides and bottoms - labeled or color coded. <p>Verify that during use, containers for contaminated sharps are: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - easily accessible - maintained upright throughout use - replaced routinely and not allowed to overfill. <p>Verify that when the containers of contaminated sharps are being moved from the area of use, the containers: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - are closed - placed in a secondary container if leakage is possible. <p>Verify that reusable containers are not opened, emptied, cleaned manually, or handled in any other manner that would expose employees to risk. (5)(15)(16)(17)</p> |
| <p>8-52. Regulated wastes are required to be handled and placed in containers that meet specific standards (29 CFR 1910.1030(d)(4)(iii)(B)).</p> | <p>Verify that regulated wastes are placed in containers that: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - are closable - constructed to contain all contents and prevent leakage of fluids - labeled or color coded - closed prior to removal. <p>(NOTE: Regulated wastes that have been decontaminated do not need to be labeled or color coded.)</p> <p>Verify that if outside contamination of the regulated waste occurs, it is placed in a second container. (5)(15)(16)(17)</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
SOLID WASTE MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>8-53. All bins, pails, cans, and similar receptacles intended for reuse that have the likelihood of becoming contaminated with blood or other potentially infectious materials are required to be inspected and decontaminated on a regularly scheduled basis (29 CFR 1910.1030(d)(4)(ii)(C)).</p> <p style="text-align: center;">...</p> <p>8-54. Labels affixed to containers of regulated wastes, refrigerators and freezers containing blood or other potentially infectious materials, and other containers used to store, transport, or ship blood or other potentially infectious materials must meet specific standards (29 CFR 1910.1030(g)(1)(i)).</p> | <p>Verify that receptacles with the potential for contamination are regularly inspected and decontaminated. (5)(15)(16)(17)</p> <p style="text-align: center;">...</p> <p>Verify that the labels: (5)(15)(16)(17)</p> <ul style="list-style-type: none"> - include the biohazard symbol - are fluorescent orange or orange-red or predominantly so, with lettering and symbols in contrasting color - are affixed as closely as possible to the container to prevent loss or removal. <p>(NOTE: Red bags or containers may be used as a substitute for labels.)</p> <p>(NOTE: Containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use are exempt from these labeling requirements.)</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (8) Safety and Occupational Health Office **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

Section 9

Special Pollutants Management
(Radon, Asbestos, PCBs, and Noise)

SECTION 9

SPECIAL POLLUTANTS MANAGEMENT

A. Applicability

This section applies to all U.S. Army Corps of Engineers (USACE) Civil Works projects, facilities, and activities. Currently, this section contains sections for polychlorinated biphenyls (PCBs), asbestos, radon gas, and environmental noise. PCBs and asbestos are regulated on the Federal level by the U.S. Environmental Protection Agency (USEPA), though in some cases, states have also promulgated regulations. This section is written in response to the Federal regulations governing activities that involve these four pollutants.

B. Federal Legislation

Noise

- *The Noise Control Act of 1972, as amended.* This law, Public Law (PL) 92-574 (42 U.S. Code (USC) 4901-4918):

1. establishes a means for effective coordination of Federal research and activities in noise control
2. authorizes the establishment of Federal noise emission standards for products distributed in commerce
3. provides information to the public respecting the noise emission and noise reduction characteristics of such products.

The following categories of products that produce noise are covered by this Act:

1. construction equipment
2. transportation equipment (including recreational vehicles and related equipment)
3. any motor or engine (including any equipment of which an engine or motor is an integral part)
4. electrical or electronic equipment.

The following articles are not covered by the Act (42 USC 4902 (3)):

1. any aircraft, aircraft engine, propeller, or appliance
2. any military weapons or equipment designed for combat use

3. any rockets or equipment designed for research, or experimental or developmental work to be performed by the National Aeronautics and Space Administration (NASA)
4. any other machinery or equipment designed for use in experimental work done by or for the Federal Government.

Toxic Substances (including PCBs)

- *The Toxic Substances Control Act (TSCA)*. This Act, as last amended in 1986, 15 USC 2601-2671, is the Federal legislation which deals with the control of toxic substances. The Act consists of three subchapters, one of which regulates the control of toxic substances, another governs asbestos hazard emergency response, and another subchapter regulates indoor radon abatement.

The U.S. policy developed in the *TSCA* on chemical substances is as follows (15 USC 2601(b)):

1. adequate data should be developed with respect to the effect of chemical substances and mixtures on health and the environment, and the development of such data should be the responsibility of those who manufacture and those who process such chemical substances and mixtures
2. adequate authority should exist to regulate chemical substances and mixtures that present an unreasonable risk of injury to health or the environment, and to take action regarding chemical substances and mixtures
3. authority over chemical substances and mixtures should be exercised in such a manner as not to impede unduly or create unnecessary economic barriers to technological innovation while fulfilling the primary purpose of this Act to assure that such innovation and commerce in such chemical substances and mixtures do not present an unreasonable risk of injury to health or the environment.

Upon request by the USEPA, each Federal department and agency is authorized to (15 USC 2625(a)):

1. make its services, personnel, and facilities available (with or without reimbursement) to the USEPA to assist the USEPA in the administration of this Act
2. furnish the USEPA with information, data, estimates, and statistics and allow the USEPA access to all information in its possession as the USEPA may reasonably determine to be necessary for the administration of this Act.

Asbestos

The purpose of the Act, regarding asbestos hazard is to (15 USC 2641(b)):

1. provide for the establishment of Federal regulations that require inspection for asbestos-containing material (ACM) and implementation of appropriate response actions with respect to the nation's schools in a safe and complete manner
2. mandate safe and complete periodic reinspection of school buildings, following response actions, where appropriate
3. require the USEPA to conduct a study to find out the extent of the danger to human health posed by asbestos in public and commercial buildings and to provide the means to respond to any such danger.

The Secretary of Defense, in cooperation with the USEPA, must, to the extent feasible and consistent with the national security, take such action as may be necessary to provide for the identification, inspection, and management (including abatement) of asbestos in any building used by the Department of Defense (DOD) as an overseas school for dependents of members of the Armed Forces. Such identification, inspection, and management (including abatement) must, subject to the preceding sentence, be carried out in a manner comparable to the manner in which a local educational agency is required to carry out such activities with respect to a school building under this Act (15 USC 2643(L)(2)).

Radon

The national long-term goal of the United States, with respect to radon levels in buildings, is that the air within buildings in the United States should be as free of radon as the ambient air outside of buildings (15 USC 2661).

The head of each Federal department or agency that owns a Federal building must conduct a study for the purpose of determining the extent of radon contamination in such buildings. Such study must include, in the case of a Federal building using a nonpublic water source (such as a well or other groundwater), radon contamination of the water. Such a study must be based on design criteria specified by the USEPA.

Such study must be completed and reported by the head of each Federal department or agency to the USEPA no later than 1 June 1990 (15 USC 2669(a)(c)(e)).

Lead-Based Paint

A recent Amendment of TSCA requires the creation of regulations governing lead-based paint activities to ensure that individuals engaged in such

activities are properly trained; that training programs are accredited; and that contractors engaged in such activities are certified. As of the publication of this manual, these regulations have not been finalized (15 USC 2681 though 2692).

- *Occupational Safety and Health Act (OSHA)*. This Act resulted in the Safety and Health Standards specified in 29 CFR 1910. In relation to asbestos it addresses occupational exposure and acceptable levels of exposure to asbestos, tremolite, anthophyllite, and actinolite in general industry and construction. Because these regulations are not considered to be environmental regulations, they are not included in this section.
- *The Hazardous Materials Transportation Act*. This Act was amended in 1978 to regulate the transport of asbestos materials. The regulations are contained in 49 CFR 172-177. In particular, 49 CFR 177 requires that asbestos must be loaded, handled, and unloaded in a manner that will minimize occupational exposure to airborne asbestos. Asbestos wastes that are transported for disposal at a landfill or other disposal facility must meet all applicable requirements.
- *Executive Order (EO) 12088*. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

C. State/Local Regulations

- *Noise*

State, regional, and local governmental agencies may develop zoning and planning ordinances that have the potential to effect USACE facilities and their operations. As a general rule, states tend to treat environmental noise as a source specific pollutant whose emissions will be controlled by the locally effected community.

- *PCBs*

Some states have agreements with the USEPA to administer the Federal regulations. According to the general structure of Federal regulatory programs, any state regulations must adopt the Federal regulations as a minimum set of

requirements. In some cases, state regulations have been developed that regulate PCBs more stringently than the Federal program. State PCB regulations may provide additional regulatory requirements beyond the Federal program to address a specific concern or activity sensitive in that state. State regulations may supersede the Federal regulations in areas including the following:

- PCBs may be regulated as a hazardous waste.
 - PCBs may be regulated to a lower concentration. For example, regulated PCBs in a particular state are defined to be materials and fluids that contain PCBs at a concentration greater than 7 ppm.
 - Shipments of PCBs may require manifest documents.
 - Analyses may be required to quantify the PCB concentration in all PCB Items.
 - Additional inspections of select PCB Items and specific disposal requirements for PCBs and PCB Items may also be required.
 - Generators of PCBs and PCB Items may be required to obtain disposal permits.
- *Asbestos*

Many state and local governments have enacted standards more stringent than the Federal requirements. If the facility is engaging in asbestos removal or disposal, contact the appropriate state and local agencies.

• *Radon*

State and local governments may enact radon control standards.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

- PCBs

ER 1130-2-423, *Polychlorinated Biphenyls Use and Disposition*. This regulation provides guidance for the continued use and legal disposal of PCBs.

- Asbestos

Engineer Technical Letter (ETL) 1110-1-118 informs field activities of the hazards involved in the use of ACM and imposes a prohibition on the use of friable asbestos materials. No ERs currently exist concerning policy and procedures for the control of ACM. However, regulations may exist at the division and/or district level.

- Radon

Refer to Memorandum, Subject: *Guidance for Radon Assessment and Mitigation for USACE Civil, Research and Development, and Military Missions*, from CECW-ON and CEEC-S dated 30 January 1989. This memorandum distributed copies of the USACE Radon Program, which is to be used as policy and guidance until an ER is written. The purpose of the of the USACE Radon Program is to identify and eliminate potential health hazards caused by radon in USACE owned or leased structures, and to prevent such hazards from occurring in new structures.

- Noise

ER 1130-2-400, *Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects*. This regulation details policy on controlling the production of excessive noise.

E. Key Compliance Requirements

- Personnel and PCBs - Certain regulations and practices must be followed to ensure the health of personnel who come in contact with PCBs. These include provision of protective work-clothing, shower facilities, and facilities for washing hands during shift. Airborne contaminations of PCBs must be assessed and certain precautionary practices followed to protect personnel, which include the wearing of respirators if contamination is above a certain level. Certain records and practices must be maintained for employees exposed to PCBs, including medical histories and physical examinations emphasizing liver and skin condition.

- PCB Equipment Marking - The following equipment is required to be marked indicating that they contain PCBs (40 CFR 761.40 and 761.45):
 1. PCB Containers with PCBs in concentrations of 50 to 500 ppm
 2. PCB Transformers (500 ppm or greater)
 3. PCB Large High Voltage Capacitors
 4. equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High Voltage Capacitor at the time of removal from service
 5. PCB Large Low Voltage Capacitors at the time of removal from service
 6. electric motors using PCB coolants with a concentration of 50 to 500 ppm
 7. hydraulic systems using PCB hydraulic fluid with concentrations of 50 to 500 ppm
 8. heat transfer systems (other than PCB Transformers) using PCB concentrations of 50 to 500 ppm
 9. PCB Article Containers containing any of the above
 10. each storage area used to store PCBs and PCB Items for disposal
 11. transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of 50 to 500 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm: mark on each end and side
 12. vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater).

- Records for PCBs - A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers, or one or more PCB Transformers. Owners and operators of PCB chemical waste landfills shall keep records on water analysis and operational records, including burial coordinates for 20 yr after disposal has ceased. Storage and disposal facilities for PCBs shall maintain records for 3 yr (40 CFR 761.180(a), 761.180(d), and 761.180(f)).

- PCB Transformers - PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse must not pose an exposure risk to food and feed and are subject to registration requirements. Combustible materials, including, but not limited to, paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer. PCB Transformers are required to be properly serviced, and inspections must be performed once every 3 mo for all in-service transformers. If the transformer is found to be leaking, it must be repaired or replaced to eliminate the source of the leak. When a PCB Transformer is involved in a fire, the facility is required to immediately report the incident to the National Response Center (NRC) (40 CFR 761.120(a), 761.120(b), 761.120(c), 761.123(d)(2), and 761.125).

- PCB Spills - Facilities are required to report spills of more than 10 lb [4.54 kg] of PCBs of concentrations of 50 ppm to the USEPA regional office. Spills of greater than 1 lb [0.45 kg] must be cleaned up. The criteria for cleanup is based on whether the spill is of high or low concentration of PCBs (40 CFR 761.120, 761.123, 761.125).
- PCB Items - The use of PCBs in electromagnetic switches, voltage regulators, capacitors, heat transfer and hydraulic systems, circuit breakers, reclosers, and cable is allowed if applicable restrictions are met and precautions taken (40 CFR 761.30).
- PCB Storage - PCBs and PCB Items at concentrations greater than 50 ppm that are to be stored before disposal must be stored in a facility that will assure the containment of PCBs. Storage prior to disposal is not to exceed 1 yr. Non-leaking and structurally undamaged PCB Large, High-Voltage Capacitors, and PCB-contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid may be stored on pallets next to a storage area that complies with the storage area requirements. Containers used for the storage of PCBs must comply with the shipping container specification of the Department of Transportation (DOT) (40 CFR 761.65 and ER 1130-2-423).
- PCB Transportation - A generator who offers a PCB waste for transport for commercial offsite storage or offsite disposal must prepare a manifest. If the generator does not receive a signed copy of the manifest within 35 days of the date the waste was accepted by the initial transporter, the generator must immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB waste (40 CFR 761.207 through 761.210 and 761.215).
- PCB Disposal - For each shipment of manifested PCB waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal. PCB contaminated fluids of concentrations greater than 50 ppm, but less than 500 ppm, are required to be disposed of in a USEPA-approved incinerator or chemical waste landfill, or in a high efficiency boiler. PCB liquids and Transformers with concentrations of 500 ppm or greater must be disposed of in a USEPA-approved PCB incinerator. PCB Capacitors must be disposed of in either a solid waste landfill or an approved incinerator depending on the concentration of PCBs. PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste when drained. PCB-contaminated Electrical Equipment, except capacitors, shall be disposed of by draining off the free-flowing liquid. PCB Articles and Containers shall be disposed of in a USEPA-approved incinerator or chemical waste landfill if all free-flowing liquids have been removed (40 CFR 761.60, 761.218, and ER 1130-2-423, para 12).

- **Asbestos Identification** - Facility buildings with the potential to be contaminated with asbestos should be tested and surveyed for asbestos and friable materials (GMP).
- **Renovation and Demolition of Asbestos-Containing Structures** - Facilities that demolish structures containing asbestos above certain limits, must meet notification requirements, emission control requirements and wetting requirements. If the concentration of asbestos is less than this level, then the facility must submit notification of demolition. Facilities being demolished under state or local governmental agency orders shall have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation. When a facility is demolished by intentional burning, all regulated asbestos-containing material (RACM) must be removed. No RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present. When air cleaning is used as a method of controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards, unless alternative equipment is authorized for use by the USEPA (40 CFR 61.145 and 61.152).
- **Asbestos Disposal** - Asbestos-containing waste must be wetted or bagged to prevent emissions to the air. Asbestos waste has to be disposed of in landfills that have been approved for the acceptance of asbestos-containing waste (40 CFR 61.150, 61.151, and 61.154).
- **Environmental Noise** - Making continuous or excessive noise at any time or any place by any means is prohibited when it interferes with an authorized use or project purpose. A single facility point of contact (POC) should be identified for noise complaints (GMP and ER 1130-2-400 para 17(e)).
- **Radon**

MITIGATION TIME FRAME
(AR 200-1, Chapter 11-3, Table 11-1)

| Radon Level (pCi/L) ⁴ | Mitigate |
|----------------------------------|----------------------------|
| Greater than 200 ¹ | 1 mo or move the occupants |
| 200-20 ¹ | 6 mo |
| 20-8 ² | 1-4 yr ³ |
| 8-4 ² | 5 yr |
| 4 or less ¹ | No action required |

¹Determine by 90-day screen or a 1-yr measurement in the case of Priority 2 and 3 structures

²Annual average determined by 1-yr measurement. Screening measurements in this range will not be used as the basis for initiating mitigation actions

³Depending on the level of the measurement

⁴pCi = picoCurie; L = liters, mo = months

F. Responsibility for Compliance

- *PCBs*

The District Safety and Occupational Health Office through the Project/Facility Manager is responsible for identifying, inspecting, marking (labeling), and properly servicing PCB Electrical Equipment (transformers and capacitors).

Once a PCB Transformer is taken out of service, it is the responsibility of the Project/Facility Manager to ensure that it is located in a licensed and technically adequate PCB storage area. Normally, such areas are located at the project and the responsibility for storage, disposal, transportation, and contracting for disposal are accomplished by the District Safety and Occupational Health Office.

It is the responsibility of the Project/Facility Manager or Powerhouse Superintendent to arrange for chemical analytical support in screening electrical equipment for PCBs and for cleanup verification.

- *Asbestos*

The District Safety and Occupational Health Office appoints an Asbestos Program Officer, to prepare the Asbestos Management Plan, and an Asbestos Operations Officer, to prepare the Asbestos Operating Plan. He also ensures that a sufficient number of in-house technicians and supervisors are trained and equipped to remove, repair, and control ACM.

The Asbestos Program Officer prepares the Asbestos Management Plan, which contains documentation on all asbestos management efforts and the mechanism for oversight of the program.

The Asbestos Operations Officer prepares and implements the Asbestos Operating Plan.

The Project/Facility Manager evaluates ACM for the potential hazard.

- *Radon*

The Project/Facilities Manager is responsible for sampling radon gas levels at facility offices and other enclosed work areas.

G. Key Compliance Definitions

- *Active Waste Disposal Site* - any disposal site other than an inactive site (40 CFR 61.14).
- *Adequately Wetted* - sufficiently mixed or penetrated with liquid to prevent the release of particulates (40 CFR 61.14).
- *Asbestos* - substances comprised of or derived from actinolite, amosite, anthophyllite, chrysotile, crocidolite, or tremolite (40 CFR 61.14).
- *Asbestos-containing Waste Materials* - means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of 40 CFR 141. This term also includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. However, as applied to demolition and renovation operations, this term includes regulated ACM waste and materials contaminated with asbestos, including disposable equipment and clothing (40 CFR 61.141).
- *Asbestos Material* - asbestos or any material containing asbestos (40 CFR 61.141).
- *Asbestos Waste from Control Devices* - any waste material that contains asbestos and is collected by a pollution control device (40 CFR 61.141).
- *Capacitor* - a device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric. Types of capacitors are as follows (40 CFR 761.3):
 1. *Small Capacitor* - a capacitor which contains less than 1.36 kg (3 lb) of dielectric fluid
 2. *Large High-Voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.) or above
 3. *Large Low-Voltage Capacitor* - a capacitor which contains 1.36 kg (3 lb) or more of dielectric fluid and which operates at 2000 V (a.c. or d.c.).
- *Category I Nonfriable Asbestos-Containing Material (ACM)* - asbestos-containing packing, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos (40 CFR 61.141).
- *Category II Nonfriable ACM* - any material including Category I nonfriable ACM containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure (40 CFR 61.141).

- *Chemical Waste Landfill* - landfill at which protection against risk of injury to health or the environment from mitigation of PCBs to land, water, or the atmosphere is provided from PCBs and PCB Items deposited therein by locating engineering, and operations, the landfill as required (40 CFR 761.3).
- *Commercial Asbestos* - any material containing asbestos that is extracted from ore and has value because of its asbestos content (40 CFR 61.141).
- *Commercial Storer of PCB Waste* - the owner or operator of each facility that is subject to the PCB storage facility standards of 40 CFR 761.65, and who engages in storage activities involving PCB waste generated by others, or PCB waste that was removed while servicing the equipment owned by others and brokered for disposal. The receipt of a fee or any other forms of compensation for services is not necessary to qualify as a commercial storer of PCB waste. It is sufficient under this definition that the facility stores PCB waste generated by others or the facility removes the PCB waste while servicing equipment owned by others. If a facility's storage of PCB waste at no time exceeds 500 gal [1892.71 L] of PCBs, the owner or operator is not required to seek approval as a commercial storer of PCB waste (40 CFR 761.3).
- *Cutting* - to penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching (40 CFR 61.141).
- *dBA* - sound level in decibels, measured using the A-weighting network of a sound level meter.
- *dB(C)* - a sound level in decibels, measured using the C-weighting network of a sound level meter.
- *Decibel (dB)* - sound is measured in decibels. The zero on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can hear. Decibels are not linear, but representative points on a sharply rising (exponential) curve.
- *Demolition* - the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of a facility (40 CFR 61.141).
- *Disposal* - intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items (40 CFR 761.3).
- *Emergency Renovation Operation* - a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment

from damage, or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment (40 CFR 61.141).

- *Emergency Situations* - for continuing use of a PCB Transformer exists when (40 CFR 761.3):
 1. neither a non-PCB Transformer nor a non-PCB-contaminated Transformer is currently in storage for reuse or readily available within 24 h for installation, or
 2. immediate replacement is necessary to continue service for power users.
- *Environmental Noise* - noise sources that interfere with desired activities or cause annoyance. These desired activities include, but are not limited to, sleep, recreation, and speech. Environmental noise also is the outdoor noise environment consisting of the noise, including ambient noise, from all sources that extends beyond the workplace. The noise environment of the workplace is not considered environmental noise.
- *Facility Component* - any part of any facility, including equipment (40 CFR 61.141).
- *Friable Asbestos Material* - any material that contains more than 1 percent asbestos by weight and can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure (40 CFR 61.141).
- *Fugitive Source* - any source of emissions not controlled by an air pollution control device (40 CFR 61.141).
- *Glove Bag* - a sealed compartment with attached inner gloves used for the handling of ACM (40 CFR 61.141).
- *Good Management Practices (GMPs)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *In or Near Commercial Buildings* - within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 m [98.42 ft] of a nonindustrial, nonsubstation building (40 CFR 761.3).
- *In Poor Condition* - the binding of the materials is losing its integrity as indicated by peeling, cracking, or crumbling of the material (40 CFR 61.141).
- *Inactive Waste Disposal Site* - any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic (40 CFR 61.141).

- *Industrial Building* - a building directly used in manufacturing or technically productive enterprises (40 CFR 761.3).
- *Leak or Leaking* - any instance in which a PCB Article, PCB Container, or PCB Equipment has any PCBs on any portion of its external surface (40 CFR 761.3).
- *Mark* - the descriptive name, instructions, cautions, or other information applied to PCBs and PCB Items, or other objects subject to these regulations (40 CFR 761.3).
- *Marking* - the marking of PCB Items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations (40 CFR 761.3).
- *Mineral Oil PCB Transformers* - any transformer originally designed to contain mineral oil as the dielectric fluid and which has been tested and found to contain 500 ppm or greater PCBs (40 CFR 761.3).
- *Non-PCB Transformers* - any transformer that contains less than 50 ppm PCB except that any transformer that has been converted from a PCB Transformer or a PCB-contaminated Transformer cannot be classified as a non-PCB Transformer until reclassification has occurred in accordance with the requirements of 40 CFR 761.30(a)(2)(v) (40 CFR 761.3).
- *Non-scheduled Renovation* - a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted (40 CFR 61.141).
- *Outside Air* - the air outside buildings and structures, including, but not limited to, air under a bridge or an open ferry dock (40 CFR 61.141).
- *PCB or PCBs* - a chemical substance that is limited to the biphenyl molecule which has been chlorinated to varying degrees or any combination of substances which contains such substance (40 CFR 761.3).
- *PCB Article* - any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. This includes capacitors, transformers, electric motors, pumps, and pipes (40 CFR 761.3).

- *PCB Article Container* - any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB Articles or PCB Equipment, and whose surface(s) has not been in direct contact with PCBs (40 CFR 761.3).
- *PCB-contaminated Electrical Equipment* - any electrical equipment, including but not limited to transformers, capacitors, circuit breakers, reclosers, voltage regulators, switches, electromagnets, and cable, that contain 50 ppm or greater PCB, but less than 500 ppm PCB (40 CFR 761.3).
- *PCB Equipment* - any manufactured item, other than a PCB Container or a PCB Article Container, which contains a PCB Article or other PCB Equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures (40 CFR 761.3).
- *PCB Item* - any PCB Article, PCB Article Container, PCB Container, or PCB Equipment, that deliberately or unintentionally contains or has as a part of it any PCB or PCBs (40 CFR 761.3).
- *PCB Transformer* - any transformer that contains 500 ppm PCB or greater (40 CFR 761.3).
- *PCB Waste* - those PCBs and PCB Items that are subject to the disposal requirements of Subpart D of 761 (40 CFR 761.3).
- *Particulate Asbestos Material* - finely divided particles of asbestos or material containing asbestos (40 CFR 61.141).
- *Planned Renovation Operations* - a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience (40 CFR 61.141).
- *Posing an Exposure Risk to Food or Feed* - being in any location where human food or animal feed products could be exposed to PCBs released from a PCB Item (40 CFR 761.3).
- *Radon-222* - a naturally occurring, inert, radioactive gas that is formed from the radioactive decay of uranium.
- *Regulated Asbestos-Containing Material (RACM)* - includes friable asbestos material; Category I nonfriable ACM that has become friable; Category I non-

friable ACM that has been subjected to grinding, casting, cutting, or abrading; and Category II nonfriable ACM that has a high probability of becoming crumbled, crushed, or pulverized (40 CFR 61.141).

- *Remove* - to take out RACM from any structure (40 CFR 61.141).
- *Renovation* - altering in any way one or more structure components. Operations in which load-supporting structural members are wrecked or taken out are excluded (40 CFR 61.141).
- *Retrofill* - to remove PCB or PCB-contaminated dielectric fluid and replace it with either PCB, PCB-contaminated, or non-PCB dielectric fluid (40 CFR 761.3).
- *Rupture of a PCB Transformer* - a violent or nonviolent break in the integrity of a PCB Transformer caused by an overtemperature and/or overpressure condition that results in the release of PCBs (40 CFR 761.3).
- *Strip* - to take off RACM from any part of a facility (40 CFR 61.141).
- *Structural Member* - any load-supporting member of a structure, such as beams and load-supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls (40 CFR 61.141).
- *Visible Emissions* - any emissions which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed water vapor (40 CFR 61.141).

SPECIAL POLLUTANTS MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|------------------|---------------------------------|--|
| All Facilities | 9-1 through 9-3 | (1)(5)(6)(8)(15)(16) |
| PCBs | 9-4 through 9-8 | (5)(8)(15)(16) |
| Records | 9-9 through 9-11 | (5)(8)(15) |
| PCB Transformers | 9-12 through 9-19 | (3)(5)(8)(10)(15)(16) |
| PCB Spills | 9-20 through 9-22 | (3)(5)(8) |
| PCB Items | 9-23 through 9-26 | (5)(8)(15) |
| PCBs in Research | 9-27 | (5)(8) |
| PCB Storage | 9-28 through 9-32 | (5)(8)(15)(16) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility, RMA - Requires Management Action, C - In Compliance

SPECIAL POLLUTANTS MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

(continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|--|---------------------------------|--|
| Transportation | 9-33 and 9-34 | (5)(8)(15) |
| Disposal | 9-35 through 9-46 | (5)(8)(15)(16) |
| Asbestos | 9-47 | (3)(5)(8)(10)(15)(16) |
| Renovation and Demolition of Asbestos-containing Structures | 9-48 through 9-57 | (3)(5)(8)(10)(15)(16) |
| Asbestos Disposal | 9-58 through 9-61 | (5)(8)(10)(16) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
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- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

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SPECIAL POLLUTANTS MANAGEMENT

GUIDANCE FOR CHECKLIST USERS

(continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|------------------|---------------------------------|--|
| Radon Gas | 9-62 through 9-64 | (5)(7)(8)(10)(15)(16) |
| Noise | 9-65 and 9-66 | (8)(15)(16) |
| Lead-Based Paint | | |

(a)CONTACT/LOCATION CODE:

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- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

SPECIAL POLLUTANTS MANAGEMENT

Records to Review

- Inspection, storage, maintenance, and disposal records for PCBs/PCB Items
- PCB Equipment inventory and sampling results
- Correspondence with regulatory agencies concerning PCB noncompliance situations
- Annual reports
- Asbestos management plan and operating plan
- Notifications to Regulators concerning asbestos disposal
- Records of onsite disposal and transportation and offsite disposal of asbestos
- Regulatory inspection reports
- Documentation of asbestos sampling and analytical results
- Documentation of preventive measure or action
- Results of air sampling at the conclusion of response action
- Records of asbestos training program
- List of buildings insulated with asbestos or housing ACM
- Record of demolition or renovation projects completed in the past 5 yr that involve friable asbestos
- Decision documents/records of decision
- Administrative Record
- A-106 Pollution Abatement Plan
- Facility Master Plan Document
- Complaint log from local community
- Spill Prevention Control and Countermeasure (SPCC) Plan
- Installation Spill Clean Up Plan (Installation Spill Contingency Plan (ISCP))
- Copies of any state regulations on the use and/or disposal of special pollutants (if applicable).

Physical Features to Inspect

- PCB storage areas
- Equipment, fluids, and other items used or stored at the facility containing PCBs
- Pipe, spray-on, duct, and troweled cementitious insulation and boiler lagging
- Ceiling and floor tiles
- Power generating or other noise
- Emergency generators

People to Interview

- Natural Resources Manager (Division, District)
- Safety and Occupational Health Office (Division, District)
- Environmental Compliance Coordinator (ECC)
- Engineering
- Operations
- Project Resource Manager
- Facility Managers

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. This chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 9-1 through 9-66 | 9-1 through 9-66 |

| | | | |
|-------------------------|---|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: SPECIAL POLLUTANTS MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility, RMA - Requires Management Action, C - In Compliance

**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>ALL FACILITIES</p> <p>9-1. Determine actions or changes since previous review of special pollutants management (GMP).</p> <p>...</p> <p>9-2. The facility should have access to current and effective regulations on PCBs, asbestos, radon gas, and noise management (GMP).</p> <p>...</p> <p>9-3. Facilities are required to comply with state and local regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> <p>...</p> | <p>Determine, by examining a copy of the previous review report, if non-compliance issues have been resolved. (5)(8)</p> <p>Determine if facility changes relative to management of special pollutants has occurred, since the previous review, that would affect the scope of the current review. (5)(6)(15)(16)</p> <p>...</p> <p>Verify that copies of the following are maintained at the facility or district or division office: (1)(5)(6)(15)(16)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance with Pollution Control Standards</i>. - 40 CFR 61, Subpart M, <i>National Emission Standards for Hazardous Air Pollutants</i>. - 40 CFR 761, <i>Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions</i>. - ER 1130-2-400, <i>Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects</i>, 1 June 1986. - ER 1130-2-423, <i>Polychlorinated Biphenyls Use and Disposition</i>, 1 November 1983. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - Applicable state and local regulations. <p>...</p> <p>Verify that the facility is complying with state and local requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - definitions of <i>PCB-contaminated</i> - PCB storage, labeling, and disposal requirements - certification of individuals sampling and/or working with asbestos - renovation and demolition procedures - asbestos handling and disposal procedures - motor vehicle noise - noise from shooting/firing ranges - construction noise.) <p>...</p> |

DIVISION: (1) Natural Resources Management (3) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>PCBs</p> <p>9-4. Certain regulations and practices must be followed to ensure the health of personnel who come in contact with PCBs (ER 1130-2-423, para 7).</p> <p>...</p> <p>9-5. Airborne contamination of PCBs must be assessed and certain precautionary practices followed to protect personnel (ER 1130-2-423, para 7).</p> <p>...</p> <p>9-6. Certain records and practices must be enacted for employees exposed to PCBs (ER 1130-2-423, para 13).</p> <p>...</p> | <p>Determine that personnel are instructed to practice the following: (15)(16)</p> <ul style="list-style-type: none"> - wash hands and exposed skin during workshift before: <ul style="list-style-type: none"> - eating - drinking - smoking - using toilet facilities - shower thoroughly before changing into street clothes. <p>Verify that protective clothing is provided and worn when working with PCBs: (8)(15)(16)</p> <ul style="list-style-type: none"> - gloves - boots - overshoes - coveralls - safety glasses - face shields. <p>...</p> <p>Determine if measurements are made of air in the workplace to identify if airborne PCB contamination is present. (8)(15)(16)</p> <p>Verify that if the contamination level is at or above 0.5 mg PCB/m³: (8)(15)(16)</p> <ul style="list-style-type: none"> - respirators are worn by all personnel - nondisposable equipment and clothing are thoroughly washed before being stored for reuse. <p>...</p> <p>Verify that employees with potential exposure to PCBs are given medical examinations that include: (8)(15)(16)</p> <ul style="list-style-type: none"> - medical history - physical examination emphasizing liver function and skin condition. <p>Verify that the liver function tests include: (8)(15)(16)</p> <ul style="list-style-type: none"> - serum glutamic oxaloacetic transaminase (SGOT) - serum glutamic pyruvic transaminase (SGPT) - gamma glutamyl transpeptidase (GGTP). <p>Verify that if respirators are used, each employee is checked annually for ability to work while using such equipment. (15)(16)</p> <p>Verify that records and results of medical examinations are maintained for at least 40 yr after the termination of employment. (8)(15)(16)</p> <p>...</p> |

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**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>9-7. Certain equipment that contains PCBs must be marked with an M₁ marking (40 CFR 761.40, 761.45, and ER 1130-2-423, para 10).</p> | <p>(NOTE: Marking Format: Large PCB Mark (M₁) letters and striping, on a white or yellow background, sufficiently durable to equal or exceed the life of the PCB Article. The size shall be 15.24 cm (6 in.) on each side. If the article is too small to accommodate this size, a smaller label (M₁) may be used.)</p> <p>Verify that the following equipment containing PCBs is marked with an M₁ marking that can be easily read by any person inspecting or servicing the equipment (see Appendix 9-1 for a sample of the marking): (8)(15)(16)</p> <ul style="list-style-type: none"> - PCB Containers with PCBs in concentrations of 50 to 500 ppm - PCB Transformers (500 ppm or greater) - PCB Large High-Voltage Capacitors - equipment containing a PCB Transformer (500 ppm or greater) or a PCB Large High-Voltage Capacitor at the time of removal from service - PCB Large Low Voltage Capacitors at the time of removal from service - electric motors using PCB coolants with a concentration of 50 to 500 ppm - hydraulic systems using PCB hydraulic fluid with concentrations of 50 to 500 ppm - heat transfer systems (other than PCB Transformers) using PCB concentrations of 50 to 500 ppm - PCB Article Containers containing any of the above - each storage area used to store PCBs and PCB Items for disposal - transport vehicles loaded with PCB Containers that contain more than 45 kg (99.4 lb) of PCBs in the liquid phase with PCB concentrations of 50 to 500 ppm or one or more PCB Transformers with PCB concentrations of greater than 500 ppm: mark on each end and side - vault doors, machinery room doors, fences, hallways, or means of access, other than a manhole or grate cover, to a PCB Transformer (500 ppm or greater). <p>(NOTE: The annual document log should contain a list of all PCB equipment at the site.)</p> <p>Verify that if one or more PCB Large High-Voltage Capacitors is installed in a protected location such as a pole, structure, or behind a fence, the pole, structure, or fence is marked and a record or procedure identifying the PCB Capacitor is maintained by the facility. (5)(8)(15)(16)</p> <p>(NOTE: Marking of PCB-contaminated Electrical Equipment (50 - 500 ppm) is not required.)</p> <p>(NOTE: If test results are not available, Appendix 9-2 can be used as an indicator for transformers of greater than 500 ppm.)</p> |

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**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>9-8. Generators, transporters, and disposers of PCB waste are required to have a USEPA ID No. (40 CFR 761.202 through 761.205).</p> <p style="text-align: center;">...</p> <p>Records</p> <p>9-9. A written annual document log must be prepared by 1 July of each calendar year, covering the previous year for all facilities that use or store at any time at least 45 kg (99.4 lb) of PCBs contained in PCB Containers or one or more PCB Transformers (500 ppm or greater, or 50 or more PCB Large, High-, or Low-Voltage Capacitors (40 CFR 761.180(a)).</p> | <p>(NOTE: Some facilities are exempt from the notification requirement and do not have a specified PCB storage area as regulated by 40 CFR 761.65, and such facilities temporarily store waste before they transport it for disposal.)</p> <p>Determine if the facility is a generator, transporter, or disposer of PCB waste. (5)(8)</p> <p>Verify that facilities that generate PCB waste have a USEPA ID No. before processing, storing, dispensing, transporting, or offering to transport PCB waste. (5)(8)</p> <p>Verify that facilities that transport or disposed of PCB waste have a USEPA ID No. (5)(8)</p> <p style="text-align: center;">...</p> <p>Verify that the annual document log and annual records (manifests certificates of disposal) are kept for at least 5 yr after the facility stops using or storing PCBs and PCB Items in the listed quantities. (5)(8)</p> <p>Verify that the written annual document log includes the following: (5)(8)</p> <ul style="list-style-type: none"> - identification of facility - calendar year covered - manifest number for every manifest generated - total number (by type) of PCB Articles, PCB Article Containers, and PCB Containers placed into storage for disposal or disposed of during the calendar year - total weight placed into storage for disposal or disposed of during the calendar year of: <ul style="list-style-type: none"> - PCBs in PCB Articles - contents of PCB Article Containers - contents of PCB Containers - bulk PCB waste - a list of PCBs and PCB Items remaining in-service at the end of the calendar year. The total weight of any PCBs and PCB Items in containers including identification of container contents and the total number of PCB Transformers, PCB Large, High- and Low-Voltage Capacitors, and the total weight of PCBs in PCB Transformers - a record of each telephone call or other form of verification to confirm the receipt of PCB waste transported by independent transport. |

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**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>9-9. (continued)</p> | <p>Verify that the annual document log contains the following for each manifest, for unmanifested waste, and for any PCBs or PCB Items received from or shipped from another facility owned or operated by the generator: (5)(8)(15)</p> <ul style="list-style-type: none"> - date removed from service for disposal (first date material placed in PCB Container) - date placed into transport for offsite storage/disposal - date of disposal (if known) - weight of PCB wastes <ul style="list-style-type: none"> - total: bulk PCB wastes - in each article: PCB Transformers or Capacitors - total in each container: PCB Containers - total weight of contents and of the PCB Article (in kg) in each PCB Article Container - serial number or other unique ID No. (except for bulk wastes) - description of the contents for PCB Containers and Article Containers. <p>Determine if the following information is provided by reviewing the annual record: (5)(8)(15)</p> <ul style="list-style-type: none"> - all signed manifests generated or received at the facility during the calendar year - all certificates of disposal that have been generated or received during the calendar year. |
| <p>9-10. Owners and operators of PCB chemical waste landfills shall keep records on water analysis and operational records, including burial coordinates, for 20 yr after disposal has ceased (40 CFR 761.180(d)).</p> | <p>Verify that necessary records are being kept for the required 20 yr. (5)(8)</p> |
| <p>9-11. Storage and disposal facilities for PCBs shall maintain specific records for 3 yr (40 CFR 761.180(f)).</p> | <p>Verify that facilities that store or dispose of PCBs collect and maintain the following records for 3 yr: (8)(15)</p> <ul style="list-style-type: none"> - all documents, correspondence, and data that have been provided by any state or local government - all documents, correspondence, and data provided to the state or local governments by the facility - any applications and related correspondence concerning wastewater discharge permits, solid waste permits, building permits, or other permits and authorizations. |

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**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>PCB TRANSFORMERS</p> <p>9-12. PCB Transformers with PCBs of 500 ppm or greater that are in use or in storage for reuse must not pose an exposure risk to food and feed (40 CFR 761.30(a)(1)(i)).</p> <p>...</p> <p>9-13. PCB Transformers with PCB concentrations of 500 ppm or greater are subject to certain registration requirements (40 CFR 761.30 (a)(i)(vi)).</p> <p>...</p> <p>9-14. Combustible materials, including, but not limited to, paints, solvents, plastics, paper, and sawn wood, must not be stored by a PCB Transformer (40 CFR 761.30(a)(1)(viii)).</p> <p>...</p> | <p>Determine, by reviewing the inventory in the annual document log, if there are any PCB Transformers on the facility, in use, or in storage for reuse, that pose an exposure risk to food and feed. (8)(15)</p> <p>...</p> <p>Verify that all PCB Transformers, including those in storage for reuse, are registered with the facility fire department, or the fire department with jurisdiction, with the following information: (5)(8)</p> <ul style="list-style-type: none"> - physical location of PCB Transformer(s) - principle constituent of dielectric fluid (i.e., PCBs, mineral oil, silicone oil, etc.) - name and telephone number of contact person knowledgeable of PCB Transformer(s). <p>...</p> <p>Verify that all combustible materials have been removed from the area within a PCB Transformer enclosure (i.e., vault or partitioned area) and the area within 5 m [16.40 ft] of a PCB Transformer or PCB Transformer enclosure. (5)(8)</p> <p>...</p> |

DIVISION: (1) Natural Resources Management (3) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (EcC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>9-15. PCB Transformers with PCB concentrations of 500 ppm or greater in use in or near commercial buildings are subject to certain requirements (40 CFR 761.30(a)(1)(ii) through 761.30(a)(1)(v) and 761.30(a)(1)(vii)).</p> | <p>Determine, by reviewing the inventory in the annual document log, if there are any transformers located in or near commercial buildings. (8)(15)</p> <p>Verify that procedure/policy exists prohibiting installation of PCB Transformers that have been placed into storage for reuse or that have been removed from another location. (8)(15)</p> <p>Verify that there are no network PCB Transformers with higher secondary voltages (equal to or greater than 430 V, including 480/277 V systems) in or near commercial buildings. (8)(15)</p> <p>Determine if any of the following PCB Transformers are in use in or near commercial buildings or located in sidewalk vaults and if a plan exists to equip such PCB Transformers with electrical protection to avoid transformer failure that would result in release of PCBs: (8)(15)</p> <ul style="list-style-type: none"> - radial PCB Transformers and lower secondary voltage network PCB Transformers (voltage less than 480 V) - radial PCB Transformers with higher secondary voltages (greater than or equal to 480 V including 480/277 V systems). <p>Determine if lower secondary voltage network PCB Transformers that have not been electrically protected are registered with the USEPA regional administrator and plans are being made to remove them from service by 1 October 1993. (8)(15)</p> <p>Verify that all higher secondary voltage radial PCB Transformers, in use in or near commercial buildings, and lower secondary voltage network PCB Transformers not located in sidewalk vaults in or near commercial buildings, are equipped with: (8)(15)</p> <ul style="list-style-type: none"> - electrical protection such as current-limiting fuses to avoid transformer ruptures - disconnect equipment to insure complete de-energization of the transformer in case of a sensed abnormal condition. <p>Verify that all lower secondary voltage radial PCB Transformers, in use in or near commercial buildings, are equipped with electrical protection, such as current-limiting fuses or equivalent technology, and provide for the complete de-energization of the transformer or complete de-energization of the faulted phase of the transformer within several hundredths of a second. (8)(15)</p> |

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| <p>9-16. PCB Transformers are required to be properly serviced (40 CFR 761.30(a)(2)).</p> | <p>Verify that servicing activities are properly conducted as follows: (8)(15)</p> <ul style="list-style-type: none"> - transformers classified as PCB-contaminated Electrical Equipment (50 - 500 ppm PCB) are only serviced with dielectric fluid containing less than 500 ppm PCB - the transformer coil is not removed during servicing of PCB Transformers with PCB concentrations of 500 ppm or greater - PCBs removed during servicing are captured and are either reused as dielectric fluid or disposed of properly - the PCBs from a PCB Transformer with PCB concentrations of 500 ppm or greater are not mixed with or added to dielectric fluid from PCB-contaminated Electrical Equipment (50 - 500 ppm PCB) - dielectric fluids containing less than 500 ppm PCBs that are mixed with fluids containing 500 ppm or greater are not used as dielectric fluid in any transformers classified as PCB-contaminated Electrical Equipment (50 - 500 ppm PCB). <p>(NOTE: PCB Transformers may be serviced with dielectric fluid at any concentration.)</p> |
| <p>9-17. Inspections must be performed once every 3 mo for all in-service PCB Transformers with greater than 500 ppm PCB (40 CFR 761.30 (a)(1)(ix) and 761.30(a)(1)(xii) through 761.30 (a)(1)(xiv)).</p> | <p>Verify that applicable transformers are inspected at least once every 3 mo by reviewing inspection records. (8)(15)(16)</p> <p>Determine if any PCB Transformers have been leaking. (8)(15)(16)</p> <p>Verify that if any leaking transformers have been discovered, proper reporting procedures have been followed. (8)(15)(16)</p> <p>Verify that the following information is recorded for each PCB Transformer inspection: (8)(15)</p> <ul style="list-style-type: none"> - location of transformer - dates of each visual inspection - date when any leak was discovered - name of person conducting inspection - location and estimate of the dielectric fluid quantity for any leaks - data and description of any cleanup, containment, or repair performed - results of any daily inspections for transformers with uncorrected active leaks. <p>(NOTE: Reduced visual inspections of at least once every 12 mo are allowed for PCB Transformers with impervious, undrained secondary containment capacity of 100 percent of dielectric fluid and for PCB Transformers tested and found to contain less than 60,000 ppm PCB.)</p> <p>(NOTE: Increased visual inspections of once a week are required for any PCB Transformer, in use or stored for reuse, that poses an exposure risk to food or feed.)</p> <p>Verify that records of inspection and maintenance are kept for 3 yr after disposal. (8)(15)</p> |

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| <p>9-18. PCB Transformers with PCB concentrations of 500 ppm or greater, found to be leaking during an inspection, must be repaired or replaced to eliminate the source of the leak (40 CFR 761.30 (a)(1)(x)).</p> <p style="text-align: center;">...</p> | <p>Determine if cleanup and/or containment of released PCBs has been initiated within 48 h of their detection or as soon as possible. (3)(5)(8)</p> <p>Verify that leaking PCB Transformers are inspected daily. (5)(10)</p> <p>Determine if plans exist to repair or replace transformers to eliminate the source of the leak. (5)</p> <p style="text-align: center;">...</p> |
| <p>9-19. When a PCB Transformer with PCB concentrations of 500 ppm or greater is involved in a fire, the facility is required to immediately report the incident to the NRC (40 CFR 761.30(a)(1)(xi)).</p> <p style="text-align: center;">...</p> | <p>Determine if any PCB Transformers have been involved in any incident where sufficient heat and/or pressure was generated to result in the violent or nonviolent rupture of a PCB Transformer and the release of PCBs. (5)(8)</p> <p>Verify that the NRC was notified and the following measures were taken: (5)(8)</p> <ul style="list-style-type: none"> - floor drains were blocked - water runoff was contained. <p style="text-align: center;">...</p> |
| <p>PCB SPILLS</p> | |
| <p>9-20. Facilities are required to report spills of more than 10 lb [4.53 kg] of PCBs of concentrations of 50 ppm or greater (40 CFR 761.120(a)(1), 761.123(d)(2), and 761.125(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that when a spill of 10 lb [4.53 kg] or more directly contaminates surface water, sewers, or drinking water, the facility notifies the regional USEPA office within 24 h after discovery of the spill and acts on the guidance given by the USEPA. (3)(5)(8)</p> <p>Verify that if a spill of 10 lb [4.53 kg] or more directly contaminates grazing land or a vegetable garden, the facility notifies the USEPA regional office within 24 h after discovery and begins the cleanup of the spill. (3)(5)(8)</p> <p>Verify that when a spill of 10 lb [4.53 kg] or more occurs that does not directly contaminate surface waters, sewers, drinking water supplies, grazing land, or a vegetable garden, the facility notifies the USEPA regional office within 24 h after discovery of the spill and begins decontamination of the spill area. (3)(5)(8)</p> <p>(NOTE: Spills of less than 10 lb [4.53 kg] are not required to be reported, but must be cleaned up.)</p> <p style="text-align: center;">...</p> |

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| <p>9-21. Cleanup of low concentration spills of less than 1 lb [0.45 kg] of PCBs (less than 270 gal [1022.06 L] of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120(b), 761.120(c), and 761.125 (b)).</p> <p>9-22. Cleanup of high-concentration spills and low concentration spills involving 1 lb [0.45 kg] or more of PCBs by weight (270 gal [1022.06 L] or more of untested mineral oil) must be done according to specific requirements (40 CFR 761.120(a)(2), 761.120(b), 761.120(c), and 761.125 (c)).</p> | <p>Verify that solid surfaces are double washed/rinsed and all indoor, residential surfaces other than vault areas are cleaned to 10 µg per 100 cm² by standard commercial wipe tests. (3)(5)(8)</p> <p>Verify that all soil within the spill area (visible traces of soil and buffer of 1 lateral foot [3.28 lateral meters] around the visible traces) is excavated and the ground restored to its original status by backfilling with clean soil (soil with less than 1 ppm PCB). (3)(5)(8)</p> <p>Verify that the above cleanup requirements are done within 48 h after identifying the spill, unless an emergency or adverse weather delays the process. (3)(5)(8)</p> <p>Verify that the cleanup is documented with records and certification of decontamination and the records are maintained for 6 yr.</p> <p>(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens.)</p> <p>(NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case-by-case basis depending on conditions, such as possibility of groundwater contamination.)</p> <p>Verify that the following actions are taken within 24 h (or within 48 h for a PCB Transformer with PCB concentrations of greater than 500 ppm) of discovery of the spill: (3)(5)(8)</p> <ul style="list-style-type: none"> - notification of the USEPA regional office and the NRC - the area of the spill is cordoned off or otherwise identified to include the area with visible traces of the spill and a 3 ft [0.91 m] buffer zone (NOTE: If there are no visible traces, the area of the spill may be estimated.) - clearly visible signs are placed to advise people to avoid the area - the area of visible contamination is recorded and documented, identifying the extent and center of the spill - cleanup of visible traces of the fluid from hard surfaces is initiated - removal of all visible traces of the spill on soil and other media such as gravel, sand, etc., is started. <p>Verify that if the spill occurs in an outdoor substation: (3)(5)(8)</p> <ul style="list-style-type: none"> - contaminated solid surfaces are cleaned to a PCB concentration of 100 µg/cm² (as measured by standard wipe tests) - soil contaminated by the spill is cleaned to either 25 ppm PCB by weight or 50 ppm PCB by choice of the facility if a label of notice is placed in the area indicating the level of cleanup - post-cleanup sampling is done. |

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| <p>9-22. (continued)</p> | <p>Verify that if the spill occurs in a restricted access area other than an outdoor substation: (3)(5)(8)</p> <ul style="list-style-type: none"> - high-contact solid surfaces are cleaned to 10 µg per 100 cm² (as measured by standard wipe tests) - low-contact, indoor, impervious solid surfaces are decontaminated to 10 µg per 100 cm² - low-contact, indoor, nonimpervious surfaces are cleaned to either 10 µg or 100 µg per 100 cm² and encapsulated at the option of the facility - low-contact, outdoor surfaces (both impervious and nonimpervious) are cleaned to 100 µg per 100 cm² - soil contaminated by the spill is cleaned to 25 ppm PCB by weight - post-cleanup sampling is done. <p>Verify that spills in nonrestricted access locations are decontaminated as follows: (3)(5)(8)</p> <ul style="list-style-type: none"> - furnishings, toys, and other easily replaceable household items are disposed of and replaced - indoor solid surfaces and high-contact outdoor solid surfaces are cleaned to 10 µg per 100 cm² (as measured by standard wipe tests) - indoor vault areas and low-contact, outdoor, impervious solid surfaces are decontaminated to 10 g per 100 cm² - at the option of the facility, low-contact, outdoor, nonimpervious solid surfaces are cleaned to either 10 or 100 µg per 100 cm² and encapsulated - soil is decontaminated to 10 ppm PCB by weight, provided that the soil is excavated to a minimum depth of 10 in. [25.4 cm] and replaced with clean soil - post-cleanup sampling is done. <p>Verify that records documenting all cleanup and decontamination are maintained for 5 yr. (3)(5)(8)</p> <p>(NOTE: The occurrence/discovery of the spill on the weekend or overtime costs are not considered acceptable reasons to delay response.)</p> <p>(NOTE: The final numerical cleanup standards do not apply to spills directly into surface waters, drinking water, sewers, grazing lands, and vegetable gardens.)</p> <p>(NOTE: The USEPA may impose more stringent or less stringent cleanup requirements on a case-by-case basis, depending on conditions, such as possibility of groundwater contamination.)</p> |

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| <p>PCB ITEMS</p> <p>9-23. PCBs may be used in heat transfer and hydraulic systems in a manner other than a totally enclosed manner at concentrations less than 50 ppm if specific requirements are met (40 CFR 761.30(d) and 761.30(e)).</p> <p>...</p> <p>9-24. Electromagnets, switches, and voltage regulators may contain PCBs at any concentrations if certain requirements are met (40 CFR 761.30(h)).</p> <p>...</p> <p>9-25. Capacitors may contain PCBs at any concentration subject to certain requirements (40 CFR 761.30(l)).</p> <p>...</p> | <p>Determine if testing has been conducted to demonstrate that heat transfer or hydraulic systems that formerly contained PCBs at a concentration greater than 50 ppm now contain less than 50 ppm PCB. (5)(8)(15)</p> <p>Verify that no fluid containing greater than 50 ppm PCB is added to heat transfer or hydraulic systems. (5)(8)(15)</p> <p>Verify that results from analyses that are performed to demonstrate presence of less than 50 ppm PCB are retained for confirmation for at least 5 yr. (5)(8)(15)</p> <p>Verify that heat transfer or hydraulic systems are free from leaks of dielectric PCBs. (5)(8)(15)</p> <p>...</p> <p>Verify that no electromagnets are used or stored at the facility, which contain greater than 500 ppm PCB and pose an exposure risk to food or feed. (8)(15)</p> <p>Verify that electromagnets that contain greater than 500 ppm PCB and pose an exposure risk to food or feed are inspected at least weekly to determine if they are leaking. (8)(15)</p> <p>Verify that electromagnets, switches, and voltage regulators that contain 500 ppm or greater PCB are not rebuilt and no removal or reworking of internal components is done during servicing. (8)(15)</p> <p>Verify that electromagnets, switches, and voltage regulators that contain between 50 and 500 ppm PCB (PCB-contaminated Electrical Equipment) are only serviced with dielectric fluid that has less than 500 ppm PCB. (8)(15)</p> <p>Verify that PCBs removed or captured are either reused as dielectric fluid or disposed of properly. (8)(15)</p> <p>Verify that dielectric fluid containing a mixture of fluids with less than 500 ppm PCBs are not used as dielectric fluid in any electrical equipment. (8)(15)</p> <p>...</p> <p>Verify that all PCB Large, High- and Low-Voltage Capacitors that pose an exposure risk to food and feed have been removed. (5)(8)</p> <p>Verify that all PCB Large, High- and Low-Voltage Capacitors are in use only in restricted-access electrical substations or in a contained and restricted-access indoor area. (5)(8)</p> <p>Verify that capacitors have been free from leaks of dielectrical PCBs. (5)(8)(15)</p> <p>...</p> |

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| <p>9-26. Circuit breakers, reclosers, and cable may contain PCBs at any concentration for the remainder of their useful lives, subject to certain conditions (40 CFR 761.30(m)).</p> <p style="text-align: center;">...</p> | <p>Verify that any circuit breakers, reclosers, and cables used at the facility are serviced using only dielectric fluid that contains less than 50 ppm PCB, and have been free from leaks. (5)(8)</p> <p style="text-align: center;">...</p> |
| <p>PCBs IN RESEARCH</p> <p>9-27. The use of pigments containing PCBs in research or microscopy or in miscellaneous items is subject to certain conditions (40 CFR 761.30(g), 761.30(h), 761.30(j), and 761.30(k)).</p> <p style="text-align: center;">...</p> | <p>Verify that pigments used at the facility contain PCBs in concentrations less than 50 ppm. (5)(8)</p> <p>Verify that pigments are handled in enclosed conditions. (5)(8)</p> <p style="text-align: center;">...</p> |
| <p>PCB STORAGE</p> <p>9-28. PCBs and PCB Items at concentrations greater than 50 ppm, which are to be stored before disposal, must be stored in a facility that will assure the containment of PCBs (40 CFR 761.65(a), 761.65(b), 761.65(c)(8), and ER 1130-2-423, para 11(a) and para 11(b)).</p> <p style="text-align: center;">...</p> | <p>Verify that the following provisions are present by inspecting the PCB storage area: (5)(8)</p> <ul style="list-style-type: none"> - the roof and walls of the building in which the PCBs are stored must be constructed so as to exclude rainfall from contacting PCBs and PCB Items - a 6 in. [15.24 cm] tall containment curb circumscribing the entire area in which any PCBs or PCB Items are stored (NOTE: Such curbing shall effectively provide containment for twice the internal volume of the largest PCB Article or 25 percent of the total internal volume of all PCB Articles or Containers stored, whichever is greater.) - drains, valves, floor drains, expansion joints, sewer lines or other openings that would allow liquids to flow from the curbed area, are not present - floors and curbing are constructed of continuous, smooth, and impervious material - location is not below a 100-yr flood water elevation. <p>Verify that PCB Articles or PCB Containers are removed from storage and disposed of within 1 yr from the date they were placed in storage. (5)(8)</p> <p style="text-align: center;">...</p> |

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| <p>9-29. PCB Items may also be stored in other areas that do not comply with the storage area requirements when such storage is for a period of less than 30 days and when any such PCB Items are marked with the date of removal from service (40 CFR 761.65 (c)(1) and ER 1130-2-423, para 11(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that only the following items are stored and are properly marked in areas used for 30-day storage. (5)(8)</p> <ul style="list-style-type: none"> - nonleaking PCB Articles and PCB Equipment - leaking PCB Articles and PCB Equipment placed in a nonleaking PCB Container that contains sufficient sorbent material to absorb liquid contained in the PCB Article or Equipment - PCB Containers in which nonliquid PCBs have been placed - PCB Containers in which liquid PCBs at a concentration of 50-500 ppm have been placed when containers are marked to indicate less than 500 ppm PCB. <p>Verify that area has been included in the facility SPCC Plan.</p> <p style="text-align: center;">...</p> |
| <p>9-30. Nonleaking and structurally undamaged PCB Large, High-Voltage Capacitors and PCB-contaminated Electric Equipment that have not been drained of freeflowing dielectric fluid, may be stored on pallets next to a storage area that complies with the storage area requirements (40 CFR 761.65(c)(2)).</p> <p style="text-align: center;">...</p> | <p>Determine that available unfilled storage space in the storage area is equal to at least 10 percent of the volume of capacitors and electrical equipment stored outside. (5)(8)</p> <p>Verify that capacitors and equipment stored outside the storage facility are on pallets and inspected at least weekly. (5)(8)(15)</p> <p style="text-align: center;">...</p> |
| <p>9-31. Specific operational procedures are required at PCB storage areas (40 CFR 761.65(c)(4), 761.65(c)(5), 761.65(c)(8) and ER 1130-2-423, para 11(d) and para 11(e)).</p> <p style="text-align: center;">...</p> | <p>Verify that the following practices are conducted at any areas where PCBs or PCB Items are stored: (5)(8)(15)</p> <ul style="list-style-type: none"> - movable equipment used for handling PCBs and PCB Items that directly contact PCBs is not removed from storage area unless decontaminated - inspections for leaks of all PCB Articles and PCB Containers in storage are done at least once every 30 days - any leaked PCBs are immediately cleaned up and any spill-absorbent material properly disposed of - PCB Articles and Containers are marked with the date when placed into storage - PCB Articles and PCB Containers are positioned so that they can be located by the date they were placed into storage - containers in which PCBs are accumulated have a record that includes quantity and date of each batch. <p style="text-align: center;">...</p> |

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| <p>9-32. Containers used for the storage of PCBs must comply with the shipping container specification of the DOT (40 CFR 761.65(c)(6) and 761.65(c)(7)).</p> <p style="text-align: center;">...</p> | <p>Verify that DOT specifications are on drums/containers. Typical specifications are 5, 5B, 17C. (5)(8)(15)(16)</p> <p>(NOTE: Containers larger than those specified in DOT Specification 5, 5B, or 17C may be used for nonliquid PCBs when such containers will provide as much protection against leaking and exposure to the environment as the DOT specified containers.)</p> <p>Verify that containers used for storage of liquid PCBs are containers without removable heads. (5)(8)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>TRANSPORTATION</p> | |
| <p>9-33. A generator who offers a PCB waste for transport for commercial offsite storage or offsite disposal must prepare a manifest (40 CFR 761.207 through 761.210).</p> <p style="text-align: center;">...</p> | <p>(NOTE: This applies to PCB wastes as defined in 40 CFR 761.3, and that contain greater than 50 ppm PCB, unless the concentration was reduced below 500 ppm by dilution.)</p> <p>Verify that a manifest has been prepared when needed and that it contains (use USEPA Form 8700-22): (5)(8)(15)</p> <ul style="list-style-type: none"> - the identity of PCB waste, the earliest date of removal from service for disposal, and the weight in kilograms of the waste for bulk loads of PCBs - the unique identifying number of each PCB Article Container or PCB Container, the date of removal from service, and the weight of PCB waste contained - the serial number, if available, or other identification for each PCB Article not in a PCB Container or PCB Article Container, the date of removal from service for disposal, and weight in kilograms of the PCB waste in the PCB Article. <p>Verify that sufficient copies are prepared to supply the generator, the initial transporter, each subsequent transporter, and the owner or operator of the disposal facility with one legible copy each, for their records, and one additional copy to be signed and returned to the generator by the owner or operator of the disposal facility. (5)(8)(15)</p> <p>Verify that the generator maintains a copy of the signed manifest for at least 3 yr after receipt of waste by the initial transporter. (5)(8)(15)</p> <p style="text-align: center;">...</p> |

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| <p>9-34. If the generator does not receive a signed copy of the manifest within 35 days of the date the waste was accepted by the initial transporter, the generator should immediately contact the transporter and/or owner or operator of the designated facility to determine the status of the PCB waste (40 CFR 761.215(a)(b)).</p> <p style="text-align: center;">...</p> <p>DISPOSAL</p> <p>9-35. For each shipment of manifested PCB waste that a disposal facility accepts, the owner or operator of the disposal facility must prepare a Certificate of Disposal (COD) (40 CFR 761.218).</p> <p style="text-align: center;">...</p> | <p>Verify that a procedure is in place so that if the generator does not receive a copy within 35 days of the date the waste was accepted by the initial transporter, an Exception Report was filed with the USEPA, containing the following information: (5)(8)(15)</p> <ul style="list-style-type: none"> - a legible copy of the manifest for which the generator does not have confirmation of delivery - a cover letter signed by the generator or his authorized representative explaining the efforts taken to locate the PCB waste and the results of those efforts. <p style="text-align: center;">...</p> <p>Verify that a COD has been prepared, containing the following information: (5)(8)(15)</p> <ul style="list-style-type: none"> - the identity of the disposal facility: by name, address, and USEPA ID No. - the identity of the PCB waste affected by the certificate, including reference to the manifest number for the shipment - a certification as defined in 40 CFR 761.3. <p>Verify that a copy of the COD was: (5)(8)(15)</p> <ul style="list-style-type: none"> - sent to the generator identified on the manifest within 30 days of the date that disposal of the PCB waste was completed - retained at the facility with the annual report. <p style="text-align: center;">...</p> |

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| <p>9-36. PCB contaminated fluids other than mineral oil dielectric fluid of concentrations greater than 50 ppm, but less than 500 ppm, are required to be disposed of according to specific requirements (40 CFR 761.60(a)(3) and ER 1130-2-423, para 12(a)(2)).</p> | <p>Determine if any PCB fluids meeting these criteria were processed for disposal in the last year. (5)(8)(15)</p> <p>Verify that disposal was done at: (5)(8)(15)</p> <ul style="list-style-type: none"> - a USEPA-approved incinerator - a USEPA-approved chemical waste landfill - a high efficiency boiler, if the boiler: <ul style="list-style-type: none"> - is rated at a minimum of 50 MBtu/h [14.65 MW/h] - uses natural gas or oil. <p>Verify that if the fluid is burned in an high efficiency boiler: (5)(8)(15)</p> <ul style="list-style-type: none"> - the boiler is rated at a minimum of 50 MBtu/h [14.54 MW] - the CO concentration in the stack is 50 ppm or less and the excess O₂ is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel - the CO concentration in the stack is 100 ppm or less and the O₂ content is at least 3 percent when PCBs are being burned and the boiler uses coal as the primary fuel - the waste does not compromise more than 10 percent (on a volume basis), of total fuel feed rate - the waste is not fed into the boiler unless the boiler is operating at its normal operating temperature - the operator of the boiler does one of the following: <ul style="list-style-type: none"> - continuously monitors and records the CO concentration and excess O₂ percentages in the stack gas while burning the waste fluid - measures and records the CO concentration and excess O₂ percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal/yr [113,562.36 L/yr] of waste fluid - measures and records the primary fuel feed rates, the waste fluid feed rates, and total quantities of both primary fuel and waste fluid feed to the boiler at regular intervals of no longer than 15 min - checks the CO concentration and the excess O₂ percentage at least once every hour and if either measurement falls below the specified levels, the flow of the waste fluid to the boiler stops immediately. <p>Verify that such PCB fluids were disposed of by an approved method at a properly licensed facility. (16)</p> |

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**COMPLIANCE CATEGORY:
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>9-37. PCB liquids greater than 500 ppm must be disposed of in an incinerator that is approved by USEPA to incinerate PCBs (40 CFR 761.60(a)(1) and ER 1130-2-423, para 12(a)(1)).</p> | <p>Verify that all shipments were made to USEPA licensed PCB incinerators by reviewing Defense Reutilization and Marketing Office (DRMO) manifests for PCB shipments over the past 3 yr. (5)(8)(15)</p> <p>(NOTE: Other disposal provisions apply to:</p> <ul style="list-style-type: none"> - mineral oil dielectric fluid from PCB-contaminated Electrical Equipment with a concentration greater than 50 ppm, but less than 500 ppm - liquids, other than mineral oil dielectric fluids, with PCB concentrations between 50 and 500 ppm - rags, solids, and other debris contaminated with PCBs at concentrations greater than 50 ppm - PCB Articles.) |
| <p>9-38. Mineral oil dielectric fluid from PCB-contaminated Electrical Equipment containing a PCB concentration greater than 50 ppm, but less than 500 ppm, is required to be disposed of according to specific methods (40 CFR 761.60 (a)(2)).</p> | <p>Verify that mineral oil dielectric fluid, as described, is disposed of in one of the following ways: (5)(8)(15)</p> <ul style="list-style-type: none"> - a USEI A-approved incinerator - an approved chemical waste landfill if written information proves that the fluid is not contaminated at greater than 500 ppm and is not an ignitable waste - an approved high efficiency boiler that is rated at a minimum of 50 MBtu/h [14.65 MW/h]. <p>Verify that if the fluid is burned in an high efficiency boiler: (5)(8)(15)</p> <ul style="list-style-type: none"> - the boiler is rated at a minimum of 50 MBtu/h [14.54 MW] - the CO concentration in the stack is 50 ppm or less and the excess O₂ is at least 3 percent when PCBs are being burned and the boiler uses natural gas or oil as the primary fuel - the CO concentration in the stack is 100 ppm or less and the O₂ content is at least 3 percent when PCBs are being burned and the boiler uses coal as the primary fuel - the waste does not compromise more than 10 percent (on a volume basis), of total fuel feed rate - the waste is not fed into the boiler unless the boiler is operating at its normal operating temperature - the operator of the boiler does one of the following: <ul style="list-style-type: none"> - continuously monitors and records the CO concentration and excess O₂ percentages in the stack gas while burning the waste fluid - measures and records the CO concentration and excess O₂ percentage in the stack gas at regular intervals of no longer than 60 min if the boiler will burn less than 30,000 gal/yr [113,562.36 L/yr] of waste fluid - measures and records the primary fuel feed rates, the waste fluid feed rates, and total quantities of both primary fuel and waste fluid feed to the boiler at regular intervals of no longer than 15 min - checks the CO concentration and the excess O₂ percentage at least once every hour and if either measurement falls below the specified levels, the flow of the waste fluid to the boiler stops immediately. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>9-39. Rags, soils, and other debris contaminated with PCBs at concentrations greater than 50 ppm must be disposed of in a PCB incinerator or in a chemical waste landfill (40 CFR 761.60(a)(4) and ER 1130-2-423, para 12(d)).</p> <p style="text-align: center;">...</p> | <p>Determine if any contaminated rags, soil, or debris have been disposed of, and verify that disposal was conducted at a properly licensed facility. (15)(16)</p> <p style="text-align: center;">...</p> |
| <p>9-40. PCB Transformers with PCB concentrations of 500 ppm or greater shall be disposed of in either a USEPA-approved incinerator or a chemical waste landfill (40 CFR 761.60(b)(1) and ER 1130-2-423, para 12(b)(2)).</p> <p style="text-align: center;">...</p> | <p>Determine if the PCB Transformers are being disposed of at a USEPA-approved incinerator or a chemical waste landfill. (5)(8)(16)</p> <p>Verify that if disposal is being done at a chemical waste landfill, the transformer is drained of all free-flowing liquids, filled with solvent, allowed to stand for at least 18 h, and then drained thoroughly. (5)(8)(16)</p> <p style="text-align: center;">...</p> |
| <p>9-41. PCB Capacitors must be disposed of in accordance with certain requirements (40 CFR 761.60(b)(2) and ER 1130-2-423, para 12(b)(3)).</p> <p style="text-align: center;">...</p> | <p>Verify that disposal of PCB Capacitors was done accordingly: (5)(8)(16)</p> <ul style="list-style-type: none"> - PCB Small Capacitors (less than 1.36 kg (3 lb) of PCBs) are disposed of in a solid waste landfill - PCB Large, High- or Low-Voltage Capacitors (greater than 1.36 kg (3 lb) of PCBs) containing more than 500 ppm are incinerated in a USEPA-approved incinerator. <p>(NOTE: The large, High-, or Low-voltage capacitors may be disposed of in a chemical waste landfill upon approval by the USEPA.)</p> <p>Verify that capacitors in storage are placed in DOT containers with absorbent material. (5)(8)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>9-42. PCB hydraulic machines containing PCBs at concentrations greater than 50 ppm may be disposed of as municipal solid waste if specific conditions are met (40 CFR 761.60(b)(3) and ER 1130-2-423, para 12(b)(4)).</p> <p style="text-align: center;">...</p> | <p>Verify that the machines are drained of all free-flowing liquid. (5)(8)(15)</p> <p>Verify that if the machine contained PCB liquid of 1000 ppm PCB or greater, it is flushed prior to disposal with a solvent containing less than 50 ppm PCB. (5)(8)(15)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>9-43. PCB-contaminated Electrical Equipment (50 - 500 ppm PCB), except capacitors, shall be disposed of by draining off the free-flowing liquid (40 CFR 761.60(b)(4)).</p> <p style="text-align: center;">...</p> | <p>Verify that the free-flowing liquid is drained from electrical equipment prior to disposal. (5)(8)(15)</p> <p style="text-align: center;">...</p> |
| <p>9-44. PCB Articles shall be disposed of properly (40 CFR 761.60(b)(5) and ER 1130-2-423, para 12(b)(5)).</p> <p style="text-align: center;">...</p> | <p>Verify that PCB Articles with concentrations at 500 ppm or greater are disposed of in either: (5)(8)(15)</p> <ul style="list-style-type: none"> - a USEPA-approved incinerator - a chemical waste landfill if all free-flowing liquids have been removed. <p>Verify that PCB Articles with PCB concentration between 50 and 500 ppm are drained of all free-flowing liquid. (5)(8)(15)</p> <p style="text-align: center;">...</p> |
| <p>9-45. PCB Containers are required to be disposed of according to specific standards (40 CFR 761.60(c) and ER 1130-2-423, para 12(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that PCB Containers with concentrations of 500 ppm or greater are disposed of in one of the following ways: (5)(8)(15)</p> <ul style="list-style-type: none"> - in a USEPA-approved incinerator - in a chemical waste landfill if the container is drained of any liquid PCBs first. <p>Verify that PCB Containers used to contain only PCBs at concentrations less than 500 ppm are drained of PCB liquid prior to disposal as municipal solid waste. (5)(8)(15)</p> <p style="text-align: center;">...</p> |

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|---|---|
| <p>9-46. PCB-contaminated fluids, other than mineral oil dielectric fluid of concentrations greater than 50 ppm but less than 500 ppm, shall be disposed of properly (40 CFR 761.60(a)(3)).</p> <p style="text-align: center;">...</p> <p>ASBESTOS</p> <p>9-47. Facility buildings with the potential to be contaminated with asbestos should be tested and surveyed for asbestos and friable material (GMP).</p> <p style="text-align: center;">...</p> | <p>Determine if any PCB fluids meeting these criteria were processed for disposal in the last year. (15)(16)</p> <p>Verify that disposal was done at: (15)(16)</p> <ul style="list-style-type: none"> - a USEPA-approved incinerator - a USEPA-approved chemical waste landfill - a high efficiency boiler, if the boiler: <ul style="list-style-type: none"> - is rated at a minimum of 50 MBtu/h [14.65 MW/h] - uses natural gas or oil. <p>Verify that such PCB fluids were disposed of by an approved method at a properly licensed facility. (16)</p> <p style="text-align: center;">...</p> <p>Verify that an asbestos survey has been done. (3)(16)</p> <p>Verify that friable materials, with the potential for asbestos contamination, that are located in areas of worker exposure are tested. (3)(16)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>RENOVATION AND DEMOLITION OF ASBESTOS-CONTAINING STRUCTURES</p> <p>9-48. Facilities that demolish structures containing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m² (160 ft²) of RACM on other facility components or at least 1 m³ (35 ft³) off facility components, and facilities renovating structures and stripping or removing at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m² (160 ft²) of friable asbestos on other facility components, or at least 1 m³ (35 ft³) off facility components must meet certain notification requirements (40 CFR 61.145(a)(1), 61.145(a)(3), and 61.145(b)).</p> <p style="text-align: center;">...</p> <p>9-49. Facilities demolishing a facility with RACM of less than 80 linear meters (260 linear feet) on pipes and less than 15 m² (160 ft²) on other facility components and less than 1 m³ (35 ft³) off facility components are required to submit notification of demolition (40 CFR 61.145(a)(2) and 61.145(b)).</p> <p style="text-align: center;">...</p> | <p>Determine if the USEPA has been provided with written notice of intent to demolish or renovate at least 10 days before demolition begins and as early as possible before renovation begins. (3)(16)</p> <p>Verify that the written notice contains the following information: (16)</p> <ul style="list-style-type: none"> - name and address of facility - description of facility being renovated or demolished (size, age, prior use) - estimates of approximate amount (linear feet or surface area) of asbestos present in the facility - location of the facility - scheduled start and completion dates of renovation or demolition - nature of planned demolition or renovation methods to be used - procedures for asbestos emissions control - name and location of waste disposal site where asbestos will be disposed of) - whether or not it is a revised notification - after 20 November 1991, certification that at least one trained person will supervise. <p>(NOTE: Facilities are also required to submit notifications, following these guidelines, for facilities being demolished under an order of a state or local governmental agency because the facility is structurally unsound and in danger of imminent collapse.)</p> <p style="text-align: center;">...</p> <p>Verify that a written notice of intent to demolish has been submitted to the USEPA administrator at least 10 days before demolition and includes: (5)(8)</p> <ul style="list-style-type: none"> - name and address of owner and operator - description of the facility being demolished including the size, age, and prior use - estimate of the approximate amount of friable asbestos present - location of the facility - schedule - procedures to be used. <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>9-50. Facilities that demolish structures that contain at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m² (160 ft²) of RACM on other facility components, or at least 1 m³ (35 ft³) off facility components, and facilities renovating structures, and stripping or removing at least 80 linear meters (260 linear feet) of friable asbestos on pipes, or at least 15 m² (160 ft²) of friable asbestos on other facility components or 1 m³ (35 ft³) or more off facility components must meet certain emission control requirements (40 CFR 61.145(a)(1) through 61.145(a)(3) and 61.145 (c)(1) through 61.145 (c)(3)).</p> | <p>Verify that all RACM is removed from facilities being demolished or renovated before any wrecking or dismantling, unless: (5)(8)</p> <ul style="list-style-type: none"> - it is a Category I nonfriable ACM that is not in poor condition and is not friable - the RACM is on a facility component that is encased in concrete or other similar material and is adequately wetted whenever exposed during demolition - it was not accessible for testing and is not discovered until after demolition began and, as a result of demolition, the materials cannot be safely removed - it is Category II nonfriable ACM, and the probability is low that the materials will become crumbled, pulverized, or reduced to powder during demolition <p>Verify that when a facility component containing or covered or coated with RACM is being taken out of the facility in units or sections: (5)(8)</p> <ul style="list-style-type: none"> - it is adequately wetted when RACM is exposed during cutting and disjoining operations, and - the units or sections are carefully lowered to ground level. <p>Verify that RACM is adequately wetted when it is being stripped from facility components while it remains in place in the facility, except in renovation operations where wetting would unavoidably damage equipment and the facility: (5)(8)</p> <ul style="list-style-type: none"> - requests a determination from the Administrator as to whether unavoidable damage would occur and supply the Administrator with the information needed to make the decision, and - uses one of the following emission control methods <ul style="list-style-type: none"> - a local exhaust ventilation and collection system - a glove bag system - leaktight wrapping to contain all RACM. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>9-51. Emissions from facility components that have been taken out in units or in sections from facilities being demolished under state or local order, or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m² (160 ft²) of RACM on other facility components, or at least 1 m³ (35 ft³) off facility components must be controlled (40 CFR 61.145 (c)(4) and 61.145(c)(5)).</p> <p style="text-align: center;">...</p> | <p>Verify that facility components are either stripped or contained in leak-tight wrappings. (5)(8)</p> <p>Verify that facility components removed from the facility as units or in sections for stripping meet the following: (5)(8)</p> <ul style="list-style-type: none"> - RACM is adequately wet during stripping operations - a local exhaust ventilation and collection system designed and operated to capture emissions is in use - the exhaust system exhibits no visible emissions to outside air. <p>Verify that when wetting operations are stopped because of the temperature, a record of the temperature is made and kept on file for 2 yr. (5)(8)</p> <p>(NOTE: For large facility components such as reactor vessels, large tanks, and steam generators, but not beams, stripping is not required if the following are met:</p> <ul style="list-style-type: none"> - the component is removed, transported, stored, disposed of, or reused without disturbing the RACM - the component is encased in leaktight wrapping and labelled.) <p style="text-align: center;">...</p> |
| <p>9-52. Emissions from RACM that has been removed or stripped from facilities being demolished under state or local orders or facilities being demolished or renovated with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m² (160 ft²) of RACM on other facility components, or 1 m³ (35 ft³) or greater off facility components must be controlled (40 CFR 61.145 (c)(6)).</p> <p style="text-align: center;">...</p> | <p>Verify that asbestos materials that have been removed or stripped meet the following: (5)(8)(10)</p> <ul style="list-style-type: none"> - materials are adequately wet and remain wet until collected for disposal - materials are carefully lowered to the ground or lower floor (not dropped or thrown) - materials not removed as units or in sections are transported to the ground via dust-tight chutes or containers if they are removed more than 50 ft [15 m] above ground level. <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>9-53. When the temperature at the point of wetting is below 0 °C [32 °F] and facilities are being demolished under state or local orders or facilities with at least 80 linear meters (260 linear feet) of RACM on pipes, or at least 15 m² (160 ft²) of RACM on other facility components or at least 1 m³ (35 ft³) off facility components are being demolished or renovated, only specific wetting requirements apply (40 CFR 61.145(c)(7)).</p> <p style="text-align: center;">...</p> | <p>Verify that facility components coated or covered with friable asbestos materials are removed as units or in sections to the maximum extent possible. (5)(8)</p> <p>(NOTE: Wetting is not required at this temperature.)</p> <p>Verify that when wetting is stopped because of freezing temperatures, the temperature is recorded in the areas containing the facility components at the beginning, middle, and end of each work day. (5)(8)</p> <p>Verify that the temperature log is kept for 2 yr. (5)(8)</p> <p style="text-align: center;">...</p> |
| <p>9-54. Facilities being demolished under state or local governmental agency orders are required to have the portion of the facility containing friable asbestos adequately wetted during the wrecking operation (40 CFR 61.145(c)(9)).</p> <p style="text-align: center;">...</p> | <p>Verify that, in facilities being demolished under state or local governmental agency orders, the portion of the facility that contains friable asbestos materials is adequately wetted during the wrecking operation. (5)(8)(10)(16)</p> <p style="text-align: center;">...</p> |
| <p>9-55. When a facility is demolished by intentional burning, all RACM, including Category I and II nonfriable ACM, must be removed (40 CFR 61.145(c)(10)).</p> <p style="text-align: center;">...</p> | <p>Verify that complex removal is done before burning. (5)(10)(16)</p> <p style="text-align: center;">...</p> |
| <p>9-56. No RACM shall be stripped, removed, or otherwise handled or distributed unless at least one onsite representative trained in asbestos removal is present (40 CFR 61.145(c)(8)).</p> <p style="text-align: center;">...</p> | <p>Verify that a trained person is present. (5)(10)(16)</p> <p>Verify that the individual receives refresher training every 2 yr. (5)(10)(16)</p> <p style="text-align: center;">...</p> |

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| <p>9-57. When air cleaning is used as a method for controlling emissions of asbestos to the outside air, the fabric filter collection systems are required to meet specific standards, unless alternative equipment is authorized for use by the USEPA (40 CFR 61.152).</p> <p style="text-align: center;">...</p> <p>ASBESTOS DISPOSAL</p> <p>9-58. Asbestos-containing waste materials are required to be disposed of properly (40 CFR 61.150(a) through 61.150 (b)).</p> <p style="text-align: center;">...</p> | <p>Verify that fabric filter collection systems meet the following requirements: (5)(15)(16)</p> <ul style="list-style-type: none"> - airflow permeability does not exceed $9 \text{ m}^3/\text{min}/\text{m}^2$ ($30 \text{ ft}^3/\text{min}/\text{ft}^2$) for woven fabrics or $11 \text{ m}^3/\text{min}/\text{m}^2$ ($35 \text{ ft}^3/\text{min}/\text{ft}^2$) for felted fabrics - the felted fabric weighs at least $475 \text{ g}/\text{m}^2$ ($14 \text{ oz}/\text{yd}^2$) and is at least 1.6 mm (1/16 in.) thick throughout - the use of synthetic fabrics containing fill yarn other than that which is spun is avoided. <p style="text-align: center;">...</p> <p>(NOTE: These requirements do not apply to Categories I or II nonfriable ACM that did not become crumbled, pulverized, or reduced to powder.)</p> <p>Verify that no visible emissions are discharged to the outside air during the collection, processing, packaging, transporting, or depositing of asbestos-containing waste material, or that the facility uses one of the following methods: (5)(8)(10)(16)</p> <ul style="list-style-type: none"> - the asbestos-containing waste is adequately wetted - the asbestos-containing waste is processed into nonfriable forms - an alternative method, approved by the USEPA, is used. <p>Verify that if the waste is wetted: (5)(10)</p> <ul style="list-style-type: none"> - asbestos waste from control devices is mixed with water to form a slurry, and the other materials are adequately wetted - no visible emissions are discharged, or air cleaning is used to control the emissions - the wetted materials are sealed in leaktight containers while wet and labeled with the phrase CAUTION, Contains Asbestos - Avoid Opening or Breaking Container; Breathing Asbestos is Hazardous to Your Health, or a label approved by OSHA - materials that do not fit in containers are put into leaktight wrapping. <p>Verify that the waste generator deposits all ACM as soon as practical at one of the following: (5)(10)</p> <ul style="list-style-type: none"> - a properly operated waste disposal site - a USEPA-approved site that converts RACM and asbestos-containing waste material into asbestos-free material. <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>9-59. Asbestos-containing waste must be transported according to specific parameters (40 CFR 61.150(c) through 61.150(e)).</p> | <p>Verify that vehicles used to transport asbestos-containing waste material are marked, indicating an asbestos dust hazard. (5)(10)(16)</p> <p>Verify that for all ACM transported off the facility, waste shipment records are maintained for at least 2 yr and a copy is provided to the waste disposal site. (5)(10)(16)</p> <p>Verify that a procedure is in place to notify the local, state, or USEPA regional office if a copy of the waste shipment record is not returned to the waste generator within 45 days after the waste was accepted by the initial transporter. (5)(10)(16)</p> |
| <p>9-60. Active waste disposal sites where ACM is being disposed of are required to meet specific standards (40 CFR 61.154(a) through 61.154(e) and 61.154(i) through 61.154(j)).</p> | <p>Determine if the facility is operating a landfill where asbestos is being disposed of. (5)(8)(16)</p> <p>Verify that there are no visible emissions from active asbestos-containing waste disposal sites, or that: (5)(8)(16)</p> <ul style="list-style-type: none"> - at the end of each operating day, or once in a 24-h period, the waste material is covered with either at least 15 cm (6 in.) of compacted non-ACM, or - a resinous or petroleum-based dust suppression agent is applied; waste crankcase oil is not suitable for this purpose - an alternative method of control, approved by the USEPA, is used. <p>Verify that unless a natural barrier exists deterring access by the general public, either the waste is properly covered by non-ACM daily, or proper warning signs and fences are installed and maintained as follows: (5)(8)(16)</p> <ul style="list-style-type: none"> - warning signs are displayed at all entrances at intervals of 100 m (330 ft) or less along the property line of the site or the perimeter of the section of the site where ACMs are disposed of, and signs state that the site contains asbestos and warn against creating dust - the area is adequately fenced. <p>Verify that a copy of waste shipment records are maintained for 2 yr. (5)(8)(16)</p> <p>Verify that until closure, a record is kept of the location, depth, and area of asbestos-containing waste on a map or diagram of the disposal area. (5)(8)(16)</p> <p>Verify that upon closure, the administration receives a copy of all records. (5)(8)(16)</p> <p>Verify that a procedure is in place to notify the administration in at least 45 days prior to excavating or disturbing deposited asbestos-containing waste material. (5)(8)(16)</p> |

DIVISION: (1) Natural Resources Management (3) Safety and Occupational Health Office **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>9-61. Inactive waste disposal sites are required to meet specific standards (40 CFR 61.151 and 61.154(f) through 61.154 (h)).</p> | <p>Verify that inactive waste disposal sites meet one of the following: (5)(8)(16)</p> <ul style="list-style-type: none"> - no visible emissions are discharged - asbestos-containing waste material is covered with at least 15 cm (6 in.) of compacted non-ACM, and a vegetation cover is grown and maintained (NOTE: In desert areas where vegetation is difficult to maintain at least 8 cm (3 in.) of additional well-graded nonasbestos-containing crushed rock may be used instead.) - asbestos-containing waste material is covered with at least 60 cm (2 ft) of non-ACM and the cover is maintained to prevent exposure. <p>Verify that unless a natural barrier exists, warning signs and a fence are installed to deter public access. (5)(8)(16)</p> <p>Verify that warning signs are displayed at all entrances and at intervals of 100 m (328 ft) or less and are easily read, indicating the area is an asbestos waste disposal site. (5)(8)(16)</p> <p>Verify that a procedure is in place to notify the Administrator in writing at least 45 days prior to excavating or disturbing any asbestos-contaminated waste material at an inactive waste disposal site. (5)(8)(16)</p> |
| <p style="text-align: center;">...</p> <p>RADON GAS</p> | |
| <p>9-62. Studies have shown a linkage between continuous exposure to radon gas and increased incidence of lung cancer. Being aware of this potential problem and taking precautions, if necessary, should be done (GMP).</p> | <p>Determine if a geological survey has been conducted of the facility area and if any of the strata are composed of one or more of the following: (5)(10)(15)(16)</p> <ul style="list-style-type: none"> - granite - phosphate - shale - uranium. |
| <p>9-63. Levels of indoor radon gas in excess of 4 pCi/L are considered dangerous (GMP).</p> | <p>Determine if a radon gas survey has been done at the facility. (5)(6)(10)(15)(16)</p> <p>Determine if the facility has had any radon gas measurements exceeding 4 pCi/L in an occupied building and if preventive measures are being taken to reduce exposure. (5)(7)(8)(10)(15)(16)</p> |

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**COMPLIANCE CATEGORY:
SPECIAL POLLUTANTS MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>9-64. The primary mode of entry of radon gas into occupied space is through migration of soil gases. Lengthy, continued exposure is especially dangerous and most likely to occur in family housing units and underground command centers, therefore, radon gas measurements should be done (GMP).</p> <p style="text-align: center;">...</p> | <p>Determine if any radon gas measurements exceeding 4 pCi/L have been found in any underground facilities or any other structures occupied for 80 h or more per year. (5)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>NOISE</p> <p>9-65. The making or continuance of excessive noise at any time or any place, and by any means, is prohibited when it interferes with an authorized use or project purpose (ER 1130-2-400, para 17(e)).</p> <p style="text-align: center;">...</p> | <p>Determine if there are records or correspondence indicating that control measures against excessive noise have been instituted. (8)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>9-66. A single facility POC should be identified for noise complaints (GMP).</p> <p style="text-align: center;">...</p> | <p>Verify that a POC has been identified. (8)</p> <p>Verify that the POC keeps a log of complaints on noises produced by USACE activities and operations. (8)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>LEAD-BASED PAINT</p> | <p>The new regulations required by TSCA have not been finalized as of the publication date of this manual.</p> |

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Appendix 9-1

PCB Label Format

| |
|--|
| <p>CAUTION CONTAINS PCBs (POLYCHLORINATED BIPHENYLS)</p> <p>A toxic environmental contaminant requiring special handling and disposal in accordance with U.S. Environmental Protection Agency Regulations 40 CFR 761. For Disposal Information contact the _____ or nearest U.S. EPA office.</p> <p>In case of accident or spill, call the _____ or the U.S. Coast Guard National Response Center: 800: 424-8802</p> |
|--|

Appendix 9-2

Dielectric Fluid Trend Names and Manufacturers

1. U.S. Manufactured Dielectrics:

| <i>Name</i> | <i>Manufacturer</i> |
|-------------------|------------------------|
| Aroclor | Monsanto |
| Aroclor B | Mallory |
| Sbestol | American Corporation |
| Askarel Hevi-Duty | Hevi-Duty Corporation |
| Askarel * | Ferranti-Packard, Ltd. |
| Askarel | Universal Mfg. Co. |
| Chlorextol | Allis-Chalmers |
| Chlorinol | Sparagoe Electric |
| Chlorphen | Jard Company |
| Diacle | Sangamo Electric |
| Dykanol | Cornell Dubilier |
| Elemex | McGraw Edison |
| Eucarel | Electric Utilities Co. |
| Hyvol | Aerovox |
| Inerteen | Westinghouse Electric |
| No-Flamol | Wagner Electric |
| Pyranol | General Electric |
| Saf-T-Kuhl | Kuhlman Electric |

* Generic name used for insulating liquids in capacitors and transformers.

2. Foreign Manufactured Dielectrics:

| <i>Name</i> | <i>Manufacturer</i> |
|-------------|---------------------|
| Clophen | Bayer (Germany) |
| Fenclo | Caffaro (Italy) |
| Kennechlor | Mitsubishi (Japan) |
| Phenoclor | Prodelec (France) |
| DK | Caffaro (Italy) |
| Pyralene | Prodelec (France) |
| Solvot | USSR |
| Santotherm | Mitsubishi (Japan) |

3. Transformers that list other dielectrics or do not bear a manufacturer's identification or service plate on the transformer: if the transformer contains any of the dielectrics (commonly referred to as askarels), it is to be certified as a PCB Transformer containing in excess of 500 ppm PCB, and no laboratory testing is necessary.

Section 10

Underground Storage Tank (UST) Management

SECTION 10

UST MANAGEMENT

A. Applicability

This section applies to U.S. Army Corps of Engineers (USACE) facilities that utilize underground storage tanks (USTs) for storage of hazardous materials or petroleum products. The section presents review action items for the proper management of USTs. The evaluation of UST management ranges from the installation of new systems and the maintenance of existing systems, to the repair, replacement, or permanent removal of USTs.

B. Federal Legislation

- *The Resource Conservation and Recovery Act (RCRA), Subtitle I.* This law, Public Law (PL) 99-49 (42 U.S. Code (USC) 6991-6991i), established the standards and procedures for USTs. It required the U.S. Environmental Protection Agency (USEPA) to issue standards on leak detection, record maintenance, release reporting, corrective actions, tank upgrading, and replacement (42 USC 6991b(a)(c)).
- *The Federal Water Pollution Control Act.* This Act, commonly known as the *Clean Water Act (CWA)*, PL 100-4 (33 USC 1251-1387), was last amended 4 February 1987. The Act's intent was to restore and maintain the chemical, physical, and biological integrity of the nation's waters. This is accomplished by regulating wastewater discharged directly into navigable or surface waters and indirectly into POTW. Federal agencies are required to abide by Federal, state, and local water pollution controls both substantively and procedurally (33 USC 1323(a)). Like the *Clean Air Act (CAA)*, the *CWA* also provides for Presidential exemptions for executive branch agencies.
- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

C. State/Local Requirements

- State and local governments have developed regulations specific to the physical environment and the regulated communities' needs. It is important to review regulations at the state and local level to ensure that any differences, such as reporting or notice requirements and monitoring requirements, can be complied with.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, lands, and waters at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- Substandard USTs - Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998. If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr (40 CFR 280.21(a) through 280.21(c)).
- New or Upgraded USTs - New or upgraded USTs are required to be fitted with spill and overfill prevention equipment. Notice must be given to the appropriate authority within 30 days when a UST system is brought into service after 8 May 1986. If the UST is installed after 22 December 1988, it must be constructed so that it will remain structurally sound for its operating life. Installation of UST must be done by a certified installer, and UST systems must be made of, or lined with, materials compatible with the substance stored (40 CFR 280.20, 280.21(d), 280.22, and 280.32).
- Metallic USTs - Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection, or other effective methods. They must also undergo regular pressure testing (40 CFR 112.7(e)(2)(iv)).
- Spill and Overfill Prevention - The filling of a UST must include the prevention of overfilling and spilling of the substance. If a spill does occur, facilities with

UST systems are required to contain and immediately clean up a spill or overfill and report it to the implementing agency within 24 h if (40 CFR 280.30, 280.53):

1. spills or overfills of petroleum that resulted in a release to the environment of more than 25 gal [93.89 L] or that caused a sheen on nearby surface water
 2. spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity.
- Corrosion Protection and Repairs - Corrosion protection on USTs must operate continuously to provide corrosion protection to the metal components that routinely contain regulated substances and are in contact with the ground. UST systems with impressed current cathodic protection are required to be inspected every 60 days by a qualified cathodic protection tester. Repairs to USTs must be performed according to industry code. Tanks and piping that have been replaced or repaired are required to be tested for tightness within 30 days. Records of repairs shall be maintained for the life of the tank (40 CFR 280.31, 280.33, 280.43, and 280.44).
 - Release Detection - Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection. Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators. Depending on the age, size, and construction of the tank, acceptable methods of release detection include the following:
 1. inventory control
 2. manual tank gauging
 3. tank tightness testing
 4. automatic tank gauging
 5. vapor monitoring
 6. groundwater monitoring
 7. interstitial monitoring.

Existing UST system tanks must implement release detection requirements based on when the system was installed. The table below identifies the deadline for providing release detection:

| Deadlines for Release Detection: | |
|-------------------------------------|--|
| UST System Installation Date: | Leak Detection Required by 22 December of: |
| All others | 1992 |
| 1980-December 1988 | 1993 |

There are separate release detection requirements for underground piping depending on whether it conveys substances under pressure or suction.

1. Pressurized piping must be equipped with an automatic line leak detector and have an annual line tightness test conducted; or pressurized piping must be equipped with an automatic line leak detector and a permanent release detection system that allows monthly monitoring. Permanent release detection methods acceptable for piping include: vapor monitoring, interstitial monitoring, and groundwater monitoring. Deadline for implementing release detection requirements on pressurized piping is 22 December 1990.
2. Suction piping either must have a line tightness test conducted every 3 yr or must use a permanent release detection system that allows monthly monitoring. Deadlines for implementing release detection requirements on suction piping are based on when the UST system was installed. The foregoing table identifies the deadline for providing release detection. For suction piping constructed to certain standards, no release detection monitoring is required. It must meet five criteria:
 1. Below-grade piping must operate at less than atmospheric pressure.
 2. Below-grade piping must be sloped to drain back into the tank when suction is released.
 3. Only one check valve can be included in each suction line.
 4. Check valve shall be located directly below and as close as practical to the suction pump.
 5. Criteria in paragraphs 2 through 4 must be verifiable.

Release detection records are required to be kept as follows (40 CFR 280.40 through 280.45):

- all written performance claims pertaining to any release detection system used for 5 yr from the date of installation
 - the results of any sampling testing or monitoring for 1 yr
 - the results of tank tightness testing, until the next test is done
 - written documentation of calibration, maintenance, or repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done
 - schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation.
- Hazardous Substance USTs - Existing hazardous substance USTs are required to meet release detection standards for petroleum USTs (40 CFR 280.42).
 - Reporting and Recordkeeping Requirements-Facilities are required to submit the following when applicable: notifications of new USTs, release reports,

planned or complete corrective actions, notice of closure or change-in-service. Records are required to be available at the UST site or at a readily available alternative site. Records are to be kept of the following (40 CFR 280.34, 280.45, and 280.74):

- a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used
 - documentation of operation of corrosion protection equipment
 - documentation of repairs
 - closure records
 - results of any site investigations.
- **Change in Service or Closure of USTs** - USTs which are put out of service temporarily, must have continued maintenance. If the UST has been out-of-service for near or over 1 yr. plans must be made for permanent closure. The facility must notify the implementing agency (USEPA) for any closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency. UST closure must be done by either removing the tank from the ground or leaving it in place with the contents removed and filled with an insert solid material and closing it to all future outside access. If a tank is undergoing a change-in-service, it must be emptied and cleaned, and a site assessment conducted. Prior to the completion of permanent closure or change-in-service, measurements must be made for the presence of a release where contamination is most likely to be present at the site. Facilities with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.70 through 280.73).

F. Key Compliance Definitions

These definitions were obtained from 40 CFR 280 as well as various ERs cited previously in this section.

- ***Aboveground Release*** - any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the aboveground portion of an UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from UST system (40 CFR 280.12).
- ***Ancillary Equipment*** - any devices including, but not limited to, such devices as pipings, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from the UST (40 CFR 280.12).

- *Belowground Release* - any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the belowground portion of a UST system and belowground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST (40 CFR 280.12).
- *Cathodic Protection* - a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current (40 CFR 280.12).
- *Cathodic Protection Tester* - a person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems (40 CFR 280.12).
- *CERCLA - Comprehensive Environmental Response Compensation and Liability Act of 1980* as amended (40 CFR 280.12).
- *Compatible* - the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST (40 CFR 280.12).
- *Connected Piping* - all underground piping, including valves, elbows, joints, flanges, and flexible connectors, attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).
- *Consumptive Use* - with respect to heating oil means consumed on the premises (40 CFR 280.12).
- *Corrosion Expert* - a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers (NACE) or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).

- *Deferred USTs* - USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(e)):
 1. wastewater treatment tank systems
 2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act of 1954*
 3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
 4. airport hydrant fuel distribution systems
 5. UST system with field-constructed tanks.

- *Dielectric Material* - a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (40 CFR 280.12).

- *Electrical Equipment* - underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable (40 CFR 280.12).

- *Excavation Zone* - the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (40 CFR 280.12).

- *Excluded USTs* - USTs which are not required to meet the requirements found in 40 CFR 280 and include (40 CFR 280.10(b)):
 1. any UST system holding hazardous wastes listed under Subtitle C of the *Solid Waste Disposal Act*, or a mixture of such hazardous waste and other regulated substances
 2. any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the *Clean Water Act (CWA)*
 3. equipment of machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment
 4. any UST system whose capacity is 110 gal [416.40 L] or less
 5. any UST system that contains a de minimis concentration of a regulated substance
 6. any emergency spill or overflow containment UST system that is expeditiously emptied after use.

- *Existing Tank System* - a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before 22 December 1988. Installation is considered to have commenced if (40 CFR 280.12):
 1. the owner or operator has obtained all Federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system
 2. a. either a continuous onsite physical construction or installation program has begun, or
 - b. the owner or operator has entered into any contractual obligations
 1. which cannot be canceled or modified without substantial loss
 2. for physical construction at the site or installation of the tank system to be completed within a reasonable time.
- *Flow-through Process Tank* - a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of material prior to their introduction into the production process or for the storage of finished products or by-products from the production (40 CFR 280.12).
- *Free-product* - a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (40 CFR 280.12).
- *Gathering Lines* - any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production (40 CFR 280.12).
- *Hazardous Substance UST System* - any UST system that contains a hazardous substance defined in Sect 101(14) of the *CERCLA* of 1980 (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum, and which is not a petroleum UST system (40 CFR 280.12).
- *Heating Oil* - petroleum that is No. 1, No. 2, No. 4--light, No. 4--heavy, No. 5--heavy, and No. 6 technical grades of fuel oil; other residual fuel oils (including Navy Special Fuel Oil and Bunker C); and other fuels when used as substitutes for one of these fuel oils. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (40 CFR 280.12).
- *Hydraulic Lift Tank* - a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (40 CFR 280.12).

- *Liquid Trap* - sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extracting operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream (40 CFR 280.12).
- *Maintenance* - the normal operational upkeep to prevent a UST system from releasing product (40 CFR 280.12).
- *Motor Fuel* - petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No. 1 or No. 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of motor engines (40 CFR 280.12).
- *New Tank System* - a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after 22 December 1988 (40 CFR 280.12).
- *Noncommercial Purposes with Respect to Motor Fuel* - not for resale (40 CFR 280.12).
- *Oil* - oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse (40 CFR 122.2).
- *On the Premises where Stored (heating oil)* - UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).
- *Operator* - any person in control of or having responsibility for the daily operation of the UST system (40 CFR 280.12).
- *Overfill Release* - a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).
- *Person* - an individual, trust, firm, joint stock company, Federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. *Person* also includes a consortium, joint venture, commercial entity, and the U.S. Government (40 CFR 280.12).
- *Petroleum UST System* - a UST system that contains petroleum or a mixture of petroleum with *de minimis* quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).

- *Pipe or Piping* - a hollow cylinder or tubular conduit that is constructed of nonearthen materials (40 CFR 280.12).
- *Pipeline Facilities* - (including gathering lines) are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings (40 CFR 280.12).
- *Recoverable Product* - product which has served its intended purpose or which contains foreign matter which renders it unfit for original or alternate use, but through processing or refining can be reclaimed for other use by the Corps or commercial industry (40 CFR 280.12).
- *Regulated Substance* -
 1. any substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under subtitle C), and
 2. petroleum, including crude oil or any fraction thereof, that is liquid at standard conditions of temperature and pressure (60 °F [15.56 °C] and 14.7 psia).

(NOTE: The term *regulated substance* includes, but is not limited to, petroleum and petroleum based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).)

- *Release* - any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from an UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).
- *Release Detection* - determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).
- *Repair* - to restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).
- *Residential Tank* - a tank located on property used primarily for dwelling purposes (40 CFR 280.12).
- *SARA* - *Superfund Amendments and Reauthorization Act of 1986* (40 CFR 280.12).

- *Septic Tank* - a water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such a receptacle is distributed through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).
- *Stormwater or Wastewater Collection System* - piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water runoff resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (40 CFR 280.12).
- *Surface Impoundment* - a natural topographic depression, excavation, or diked area formed primarily of earthen materials (although may be lined with man-made materials), that is not an injection well (40 CFR 280.12).
- *Tank* - a stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g., concrete, steel, or plastic) that provide structural support (40 CFR 280.12).
- *Underground Area* - an underground room such as a basement, cellar, shaft, or vault, providing enough space for physical inspection of the exterior of the tank, situated on or above the surface of the floor (40 CFR 280.12).
- *Underground Release* - any belowground release (40 CFR 280.12).
- *Underground Storage Tank (UST)* - any one or a combination of tanks (including underground pipes connected thereto) used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):
 1. farm or residential tank of 1100 gal [4163.95 L] or less capacity used for storing motor fuel for noncommercial purposes
 2. tank used for storing heating oil for consumptive use on the premises where stored
 3. septic tanks
 4. pipeline facilities (including gathering lines) which are regulated by other acts
 5. surface impoundment, pit, pond, or lagoon
 6. stormwater or wastewater collection system
 7. flow-through process tank
 8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations

9. storage tank situated in an underground area if the storage tank is situated upon or above the surface of the floor such as basements or tunnels
10. tanks holding 110 gal [106.21 L] or less
11. emergency spill and overfill tanks.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in paragraphs 1 through 9 of this definition.)

- *Upgrade* - the addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of an underground storage tank system to prevent the release of product (40 CFR 280.12).
- *UST System or Tank System* - UST, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).
- *Wastewater Treatment Tank* - a tank that is designed to receive and treat influent wastewater through physical, chemical, or biological methods (40 CFR 280.12).

UST MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|-------------------------------------|---------------------------------|--|
| All Facilities | 10-1 through 10-3 | (5)(8)(15)(16) |
| Substandard USTs | 10-4 | (6)(8)(10)(15)(16) |
| New or Upgraded USTs | 10-5 through 10-9 | (5)(7)(8)(10)(15)(16) |
| Metallic USTs | 10-10 | (5)(7)(8)(10)(15)(16) |
| Heating Oil USTs | 10-11 | (5)(7)(8)(10)(15)(16) |
| UST Filling | 10-12 and 10-13 | (5)(7)(8)(10)(15)(16) |
| Corrosion Protection and Repairs | 10-14 and 10-15 | (5)(7)(8)(10)(15)(16) |
| Release Detection | 10-16 through 10-18 | (5)(7)(8)(10)(15)(16) |
| UST Releases | 10-19 through 10-25 | (5)(7)(8)(10)(15)(16) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

UST MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

(continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|----------------------------------|---------------------------------|--|
| Hazardous Substance USTs | 10-26 | (5)(7)(8)(10)(15) |
| Deferred UST Systems | 10-27 | (5)(7)(8)(10)(15)(16) |
| Documentation | 10-28 and 10-29 | (5)(7)(8)(10)(15)(16) |
| Changes in Service or Closure | 10-30 through 10-36 | (5)(7)(8)(10)(15)(16) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

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DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

UST MANAGEMENT

Records to Review

- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Official correspondence with state implementing agency
- Spill Prevention and Response Plan
- Records of spill response training programs
- Results of all UST testing, sampling, monitoring, inspection, maintenance, and repair work (for 1 yr)
- Registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Records of all spills, leaks, and associated site assessment/cleanup activities (for 3 yr)
- Records for UST disposal, closure, and removal from activity and results of excavation area assessment (for 3 yr)

Physical Features to Inspect

- Refueling facilities, including:
- Belowground storage tanks and dikes
- Venting
- Fill pipes
- Gauges
- Vehicle maintenance areas
- Oil and hazardous substance site

People to Interview

- Natural Resources Manager (Division, District)
- Safety and Occupational Health Office (District)
- Operations (Division, District)
- Environmental Compliance Coordinator (ECC)
- Engineering
- Project Resource Manager
- Facility Managers

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. This chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 10-1 through 10-3 | 10-1 through 10-3 |
| 10-4 | 10-5 |
| 10-5 | deleted |
| 10-6 | 10-9 |
| 10-7 through 10-12 | 10-12 through 10-17 |
| 10-13 | 10-19 |
| 10-14 through 10-22 | 10-21 through 10-29 |
| 10-23 | 10-10 |
| 10-24 through 10-26 | 10-6 through 10-8 |
| 10-27 through 10-33 | 10-30 through 10-36 |
| 10-34 | 10-4 |
| no match | 10-11, 10-18, 10-20 |

| | | | |
|-------------------------|--|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility, RMA - Requires Management Action, C - In Compliance

**COMPLIANCE CATEGORY:
UST MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>ALL FACILITIES</p> <p>10-1. Determine action or changes since last review of UST management (GMP).</p> <p>...</p> <p>10-2. Facilities should have access to all appropriate regulations pertaining to UST operation, maintenance, and closure (GMP).</p> <p>...</p> <p>10-3. Facilities are required to comply with state and local regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> <p>...</p> | <p>Determine, by examining a copy of the previous review report, if non-compliance issues have been resolved. (5)(15)(16)</p> <p>...</p> <p>Determine if copies of the following are maintained at the facility or district or division office by reviewing records: (5)(8)(15)(16)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance With Pollution Control Standards</i>. - 40 CFR 112, <i>Oil Pollution Prevention</i>. - 40 CFR 280, <i>Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (USTs)</i>. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - Applicable state and local regulations. <p>...</p> <p>Verify that the facility is complying with state and local requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - operational standards - permitting requirements - replacement and removal schedules - cathodic protection requirements - alarm system requirements.) <p>...</p> |

DIVISION: (1) Natural Resources Management (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
UST MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>SUBSTANDARD USTs</p> <p>10-4. Substandard UST systems must be upgraded, closed, or removed from service by 22 December 1998 (40 CFR 280.21(a) through 280.21(c)).</p> | <p>(NOTE: See Appendix 10-1 for guidance on applicability of checklist items.)</p> <p>(NOTE: If a release detection system is not available for the UST, it must be phased out in 1 to 5 yr.)</p> <p>Determine if there are currently any plans for upgrades or decommissioning of a substandard UST. (6)(8)</p> <p>Verify that upgrading of steel USTs includes one of the following methods: (10)(15)(16)</p> <ul style="list-style-type: none"> - internal lining according to the following requirements: <ul style="list-style-type: none"> - lining is installed so that it prevents releases due to structural failure or corrosion and meets a recognized code of practice - within 10 yr after installation of lining and every 5 yr thereafter, the lined tank is inspected internally and found to be structurally sound, with the lining still performing in accordance with original design specifications - cathodic protection with field-installed systems designed by an expert, impressed current systems, or an approved equivalent system, and the integrity is assured by one of the following: <ul style="list-style-type: none"> - tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion - the tank has been installed for less than 10 yr and is monitored monthly for releases - the tank has been installed for less than 10 yr and is assessed for corrosion holes by conducting two tightness tests, one before and one 3 to 6 mo after installation of the cathodic protection system - tank is assessed for corrosion holes by a method that is determined to be equally protective by the implementing agency - lining combined with cathodic protection: <ul style="list-style-type: none"> - if lining is installed according to requirements - if cathodic protection system meets requirements. <p>Verify that when spill and overfill equipment is added, the tank meets the same standards as new USTs. (10)(15)(16)</p> <p>Verify that piping that routinely contains regulated substances and is in contact with the ground is cathodically protected. (10)(15)(16)</p> |

DIVISION: (1) Natural Resources Management (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
UST MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>NEW OR UPGRADED USTs</p> <p>10-5. New or upgraded USTs are required to be fitted with spill and overfill prevention equipment (40 CFR 280.20(c) and 280.21(d)).</p> <p>...</p> <p>10-6. Notice must be given within 30 days when a UST system is brought into service after 8 May 1986 (40 CFR 280.22).</p> <p>...</p> | <p>Verify that spill prevention equipment will prevent a release of product to the environment when the transfer hose is detached from the fill pipe. (10)(15)(16)</p> <p>Verify that overfill prevention equipment does one of the following: (10)(15)(16)</p> <ul style="list-style-type: none"> - automatically shuts off flow into the tank when the tank is no more than 95 percent full - alerts the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm - restrict flow 30 min prior to overfilling, alert the operator with a high-level alarm 1 min before overfilling, or automatically shut off flow into the tank so that none of the fittings are exposed to product due to overfilling. <p>(NOTE: This equipment is not required if approved equivalent equipment is used or the UST system is filled by transfers of no more than 25 gal [94.64 L] at one time.)</p> <p>(NOTE: All existing tanks must be upgraded by 1998.)</p> <p>...</p> <p>Determine if the facility has brought any USTs into service after 8 May 1986. (5)(7)(8)(10)(15)(16)</p> <p>Verify that appropriate notification was issued. (5)(7)(8)(10)(15)(16)</p> <p>(NOTE: State forms may be used for notification in lieu of USEPA Form 7530. These notices must be sent to the appropriate agency.)</p> <p>...</p> |

DIVISION: (1) Natural Resources Management (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
|--|---|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>10-7. UST systems installed after 22 December 1988 must be constructed in such a manner that they will remain structurally sound for their operating life (40 CFR 280.20(a) and 280.20(b)).</p> <p>...</p> <p>10-8. Installation of UST must be done by a certified installer and according to standard practices (40 CFR 280.20 (d) and 280.20(e)).</p> <p>...</p> <p>10-9. Facilities are required to use UST systems made of, or lined with, materials compatible with the substance stored (40 CFR 280.32).</p> <p>...</p> | <p>Verify that USTs conform to industry standards by reviewing records. (5)(7)(8)(10)(15)(16)</p> <p>Verify that USTs meet the following: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - they have leak/spill prevention protection - the tank is constructed of one of the following materials: <ul style="list-style-type: none"> - fiberglass-reinforced plastic - steel which has one of the following types of cathodic protection: <ul style="list-style-type: none"> - coated with a suitable dielectric material - field installed cathodic protection (expert installed) - impressed current systems which allow determination of current operating status - steel fiberglass reinforced plastic composite - metal without additional corrosion protection provided that: <ul style="list-style-type: none"> - the site has been determined not to cause corrosion to the tank by a corrosion expert - records are maintained for the life of the tank that it is in a corrosion free environment - construction is in a manner that is deemed to prevent release of the regulated substance. <p>(NOTE: Piping must also meet these criteria with the exception of not being constructed of steel fiberglass reinforced plastic composite.)</p> <p>...</p> <p>Determine if new UST systems have been properly installed by reviewing records for certification. (5)(7)(8)(10)(15)(16)</p> <p>Verify that if the facility does its own installation of USTs, the installation is done according to standard practices. (5)(7)(8)(10)(15)(16)</p> <p>Verify that the installer was certified by manufacturer or implementing agencies. (5)(7)(8)(10)(15)(16)</p> <p>...</p> <p>Verify that the substances stored in UST systems are compatible with the system. (5)(7)(8)(10)(15)(16)</p> <p>Determine which USTs are being used to store a substance other than that for which they were originally intended. (5)(7)(8)(10)(15)(16)</p> <p>...</p> |

DIVISION: (1) Natural Resources Management (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| METALLIC USTs | |
| 10-10. Buried metallic storage tanks installed after 1973 must be protected from corrosion by coatings, cathodic protection or other effective methods (40 CFR 112.7 (e)(2)(iv)) | <p>Verify that new USTs are appropriately protected from corrosion by inspecting records and interviewing personnel. (5)(7)(8)(10)(15)(16)</p> <p>Verify that the tanks are pressure tested regularly. (5)(7)(8)(10)(15)(16)</p> <p>(NOTE: Facilities are exempt from the requirements outlined in 40 CFR 112 if:</p> <ul style="list-style-type: none"> - the facility, equipment, or operation is not subject to the jurisdiction of the USEPA as follows: <ul style="list-style-type: none"> - onshore and offshore facilities which, due to their location, could not be reasonably expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines - equipment or operations of vessels or transportation related onshore and offshore facilities which are subject to the authority of the Department of Transportation (DOT) - both of the following criteria are met: <ul style="list-style-type: none"> - the underground buried storage capacity of the facility is 42,000 gal [158,987.3 L] or less of oil - the storage capacity which is not buried at the facility is 1320 gal [4996.74 L] of oil or less and no single container exceeds a capacity of 660 gal [2498.37 L] (40 CFR 112.1(d)(2).) |
| ... | ... |
| HEATING OIL USTs | |
| 10-11. USTs used to store heating oil for consumptive use on the premise should be stored in tanks that meet the requirements outlined in 40 CFR 280 (GMP). | <p>Determine if the facility has tanks used for storing heating oil for consumptive use on the premise. (5)(7)(8)(10)(15)(16)</p> <p>Verify that these tanks meet release detection requirements, spill and overflow protection requirements, corrosion control requirements, and release reporting requirements applicable to tanks that meet the definition of UST. (5)(7)(8)(10)(15)(16)</p> <p>(NOTE: Under 40 CFR 280.12, USTs storing heating oil for consumptive use on the premises are exempted from the regulatory definition of UST.)</p> |
| ... | ... |

10 - 25

**COMPLIANCE CATEGORY:
UST MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>UST FILLING</p> <p>10-12. The filling of a UST must include the prevention of overfilling and spilling of the substance (40 CFR 280.30 (a)).</p> <p>...</p> <p>10-13. Facilities with UST systems are required to contain and immediately clean up a spill or overfill and report it to the implementing agency within 24 h in specific situations (40 CFR 280.30(b) and 280.53).</p> <p>...</p> | <p>Determine if there is a problem with overfilling of USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill-lines for visible or odorous indications of contamination. (5)(7)(8)(10)(15)(16)</p> <p>Determine if the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred. (5)(7)(8)(10)(15)(16)</p> <p>Verify that fill-lines are capped and locked. (5)(7)(8)(10)(15)(16)</p> <p>Verify that the transfer is monitored constantly. (5)(7)(8)(10)(15)(16)</p> <p>...</p> <p>Determine if the facility has reported, contained, and cleaned up any and all spills or overfills which met the following criteria: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - spills or overfills of petroleum that resulted in a release to the environment of more than 25 gal [94.64 L] or that caused a sheen on nearby surface water - spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity (see the <i>Hazardous Materials Management Appendices</i>). <p>(NOTE: Spills or overfills of hazardous substances equal to or greater than the reportable quantity must be immediately reported to the National Response Center (NRC).)</p> <p>Verify that the facility has contained and immediately cleaned-up a spill or overfill of petroleum that is less than 25 gal [94.64 L] and a spill or overfill of a hazardous substance that is less than the reportable quantity. (5)(7)(8)(10)(15)(16)</p> <p>Verify that if these lesser quantities cannot be accomplished within 24 h, or another reasonable time period established by the implementing agency, the implementing agency is notified. (5)(7)(8)(10)(15)(16)</p> <p>...</p> |

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| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
|--|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>CORROSION PROTECTION AND REPAIRS</p> <p>10-14. UST systems with corrosion protection must meet specific requirements (40 CFR 280.31).</p> | <p>Determine which UST systems have corrosion protection. (5)(7)(8)(10)(15)(16)</p> <p>Verify that the corrosion protection systems operate continuously to provide corrosion protection to the metal components that routinely contained regulated substances and are in contact with the ground. (5)(7)(8)(10)(15)(16)</p> <p>Verify that all cathodic protection systems are tested within 6 mo after installation and every 3 yr thereafter. (5)(7)(8)(10)(15)(16)</p> <p>Verify that UST systems with impressed current cathodic protection are inspected every 60 days. (5)(7)(8)(10)(15)(16)</p> <p>Verify that inspection records are maintained of the last three inspections for systems with impressed current cathodic protection and of the last two inspections for all other cathodic protection systems. (5)(7)(8)(10)(15)(16)</p> <p>Verify that inspections are carried out by a qualified cathodic protection tester. (5)(7)(8)(10)(15)(16)</p> |

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| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
|--|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>10-15. Repairs to USTs must be performed according to industry code (40 CFR 280.33, 280.43, and 280.44).</p> | <p>Determine if there have been any repairs by reviewing the records and interviewing personnel. (5)(7)(8)(10)(15)(16)</p> <p>Determine who does repairs to USTs and that the following procedures are used to repair USTs: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - fiberglass-reinforced tanks are repaired by the manufacturer's authorized representative or according to industry standards - metal pipe fittings and sections that have leaked due to corrosion are replaced, whereas fiberglass may be repaired according to the manufacturer's specifications. <p>Verify that tanks and piping that have been replaced or repaired are tested for tightness within 30 days. (5)(7)(8)(10)(15)(16)</p> <p>(NOTE: Tanks and piping need not be tested if:</p> <ul style="list-style-type: none"> - the repairs are internally inspected - the repaired portion is already monitored monthly - an equally protective test is used.) <p>Verify that within 6 mo of repair, tanks with cathodic protection systems are tested as follows: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - every 3 yr thereafter for all cathodic protection systems - every 60 days for impressed current cathodic protection systems. <p>Verify that records of repairs are maintained for the life of the tank. (5)(7)(8)(10)(15)(16)</p> |

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| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>RELEASE DETECTION</p> <p>10-16. Facilities with new and existing USTs are required to provide a method, or combination of methods of release detection (40 CFR 280.10(d), 280.40, and 280.45).</p> | <p>Verify that the installed release detection system can detect a release from any portion of the tank and the connected underground piping. (5)(7)(8)(10)(15)(16)</p> <p>Verify that the facility has a program in place (or at least in the proposed stage) for provisions of release detection. (5)(7)(8)(10)(15)(16)</p> <p>Verify that the appropriate schedule is being complied with (see Appendix 10-2). (5)(7)(8)(10)(15)(16)</p> <p>(NOTE: Any pressurized delivery lines must be retrofitted by 22 December 1990.)</p> <p>(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators.)</p> <p>(NOTE: See Appendix 10-3 for information on release detection methodologies.)</p> <p>Verify that records are kept as follows: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - all written performance claims pertaining to any release detection system used for 5 yr from the date of installation - the results of any sampling testing or monitoring for 1 yr - the results of tank tightness testing, until the next test is done - written documentation of calibration, maintenance, repair, of release detection equipment permanently located onsite, at least 1 yr after the servicing is done - schedules of required calibration and maintenance provided by the release detection equipment manufacturer, 5 yr after the date of installation. |

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**COMPLIANCE CATEGORY:
UST MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>10-17. UST systems containing petroleum must meet specific release detection system requirements (40 CFR 280.41, 280.43, and 280.44).</p> | <p>Verify that tanks are monitored every 30 days using the methods in Appendix 10-3 except for: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed - UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed - tanks which hold less than 550 gal [2081.98 L] may use weekly tank gauging. <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done according to the methods in Appendix 10-3: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - pressurized piping <ul style="list-style-type: none"> - equipped with automatic line leak detector - annual tightness testing or monthly monitoring - suction piping <ul style="list-style-type: none"> - line tightness testing every 3 yr or monthly monitoring - no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> - operates at less than atmospheric pressure - is sloped so that contents of pipe will roll back to tank when suction is released - only one check valve is included in each suction line - check valve is located directly below and as close as practical to the suction pump. <p>(NOTE: Release detection requirements in 40 CFR 280.40 through 280.45 do not apply to USTs which store fuel solely for use by emergency power generators.)</p> |

DIVISION: (1) Natural Resources Management (4) Operations **DISTRICT:** (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (8) Safety and Occupational Health Office (10) Operations **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
UST MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>10-18. UST systems containing fuel used solely for emergency generators should meet specific release detection system requirements (GMP).</p> | <p>Verify that tanks are monitored every 30 days using the methods in Appendix 10-3 except for: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - UST systems which meet performance standards for new or upgraded systems and monthly inventory requirements may use tank tightness testing at least every 5 yr until 22 December 1998 or until 10 yr after the tank is upgraded or installed - UST systems which do not meet performance standards for new or upgraded systems, may use monthly inventory controls and annual tank tightness testing until 22 December 1998, at which time the tank must be upgraded or permanently closed - tanks which hold less than 550 gal [2089.98 L] may use weekly tank gauging. <p>Verify that underground piping which routinely contains a regulated substance has the following release detection done according to the methods in Appendix 10-3: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - pressurized piping <ul style="list-style-type: none"> - equipped with automatic line leak detector - annual tightness testing or monthly monitoring - suction piping <ul style="list-style-type: none"> - line tightness testing every 3 yr or monthly monitoring - no release detection system is needed for suction piping which is below grade and: <ul style="list-style-type: none"> - operates at less than atmospheric pressure - is sloped so that contents of pipe will roll back to tank when suction is released - only one check valve is included in each suction line - check valve is located directly below and as close as practical to the suction pump. |
| <p align="center">...</p> <p>UST RELEASES</p> <p>10-19. Facilities with UST systems are required to report releases under specific conditions (40 CFR 280.50).</p> | <p>Determine if the facility has reported any and all releases which met the following criteria: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - released regulated substances were found at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface waters) - unusual operating conditions were observed, such as the erratic behavior of dispensing equipment or a sudden loss of product, unless it is determined the problem lies in the equipment, but it is not leaking and is immediately repaired or replaced - monitoring results indicate a possible release. <p>Verify that the implementing agency was notified within 24 h (or time period specified by the implementing agency) of the release. (5)(7)(8)(10)(15)(16)</p> |

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| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
|---|---|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>10-20. Installations must investigate and confirm all suspected releases of a regulated substances requiring reporting within 7 days unless a corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.52).</p> <p>...</p> <p>10-21. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA-C Section 3004(u) corrective action requirements, are required to perform specific initial response actions within 24 h of a release (40 CFR 280.60 and 280.61).</p> <p>...</p> | <p>Verify that tightness testing is done within 7 days of a suspected release to determine whether a leak is in the tank or the delivery piping. (5)(7)(8)(10)(15)(16)</p> <p>Verify that if environmental contamination is the basis for suspecting a leak, and the tightness test does not indicate that a leak exists, a site check is done that measures for the presence of a release in the areas where contamination is most likely to be present. (5)(7)(8)(10)(15)(16)</p> <p>(NOTE: If the results indicate that a leak has occurred, corrective actions must be started.)</p> <p>(NOTE: If the tightness test does not indicate a leak, and environmental contamination is not the basis for suspecting a release, no further investigation is needed.)</p> <p>...</p> <p>Verify that facility personnel are aware of the following initial response actions: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - the release is reported - immediate action is taken to prevent further release of the regulated substance into the environment - fire, explosion, and vapor hazards are identified and mitigated. <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>10-22. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA-C Section 3004(u) corrective action requirements, are required to perform specific initial abatement measures and site checks unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.62).</p> <p align="center">...</p> | <p>Verify that the following actions are performed: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - as much of the substance as is necessary to prevent further release is removed from the UST system - visual inspection of aboveground releases or exposed belowground releases is done and further migration of the released substance into surrounding soils and groundwaters is prevented - monitoring and mitigation of any fire and safety hazards caused by vapors or free product is done - hazards from contaminated soils that are excavated or exposed are remedied - measurements are done for the presence of a release where the contamination is most likely to be present unless the presence and source of the release has previously been confirmed - an investigation is done for the presence of free product, and the removal of free product is done as soon as possible. <p>Verify that within 20 days after release confirmation a report is submitted to the implementing agency summarizing the initial abatement measures and site checks, and the resulting information and data are collected. (5)(7)(8)(10)(15)(16)</p> <p align="center">...</p> |
| <p>10-23. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA-C Section 3004(u) corrective action requirements, are required to assemble information about the site and nature of the release unless exempted by the implementing agency (40 CFR 280.60 and 280.63).</p> <p align="center">...</p> | <p>Verify that the following information is collected: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - data on the nature and estimated quantities of the release - data from available sources and/or site investigations concerning surrounding population, water quality, use and approximate locations of wells potentially affected, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use - results of site check - results of free product investigation. <p>Verify that within 45 days of the release confirmation this information is submitted to the implementing agency in a manner that demonstrates the applicability and technical adequacy or according to a format required by the implementing agency. (5)(7)(8)(10)(15)(16)</p> <p align="center">...</p> |

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| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
|--|---|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>10-24. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA-C Section 3004(u) corrective action requirements, where site investigations have indicated free product must, to the maximum extent possible as required by the implementing agency, remove the free product (40 CFR 280.60 and 280.64).</p> <p>...</p> <p>10-25. Facilities with a confirmed release from petroleum or hazardous substance USTs, except for excluded USTs (see the definitions) and USTs exempted under the RCRA-C Section 3004(u) corrective action requirements, are required to perform an investigation for soil and groundwater contamination (40 CFR 280.60 and 280.65).</p> <p>...</p> | <p>Determine if there are any release sites at the facility where free product has been confirmed. (5)(7)(8)(10)(15)(16)</p> <p>Verify that free product removal is done so that the spread of contamination is minimized. (5)(7)(8)(10)(15)(16)</p> <p>Verify that, unless exempted by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes the following: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - name of the person responsible for implementing the free product removal system - estimated quantity, type, and thickness of free product observed or measured - type of free product recovery system used - whether there will be any onsite or offsite discharges during the recovery operation and where this discharge will be located - type of treatment used for any discharge during the recovery operation and where this discharge will be located - steps taken to obtain any required permits - disposition of the recovered free product. <p>...</p> <p>Verify that an investigation of the release, the release site, and possibly affected surrounding areas has been done and identified if any of the following conditions exists: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - evidence that groundwater wells have been affected - free product is evident - evidence that contaminated soil is in contact with groundwater - the implementing agency requests an investigation. <p>Verify that the results of the investigation are submitted to the implementing agency according to a time schedule defined by the implementing agency. (5)(7)(8)(10)(15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>HAZARDOUS SUBSTANCE USTs</p> <p>10-26. Hazardous substance USTs must meet specific standards (40 CFR 280.42).</p> | <p>Verify that existing hazardous substance USTs meet release detection standards for petroleum USTs. (5)(7)(8)(10)(15)</p> <p>Verify that existing hazardous substance USTs meet the requirements for new hazardous substance USTs by 22 December 1998 as stated below: (5)(7)(8)(10)(15)</p> <ul style="list-style-type: none"> - secondary containment is checked for evidence of a release at least every 30 days and is designed and constructed to: <ul style="list-style-type: none"> - contain regulated substances released until they are detected and removed - prevent releases of regulated substance to the environment at any time during the operational life of the UST - double-walled tanks are designed, constructed, and installed to: <ul style="list-style-type: none"> - contain releases from any portion of the inner tank within the outer-wall - detect failure of the inner-wall - external liners, including vaults, are designed, constructed, and installed in such a manner that: <ul style="list-style-type: none"> - 100 percent of the capacity of the largest tank is contained within its boundary - the interference of precipitation or groundwater intrusion is prevented with the ability to contain or detect release of regulated substances - the tank is completely surrounded. <p>Verify that underground piping is equipped with secondary containment which satisfies the requirements for UST secondary containment. (5)(7)(8)(10)</p> <p>Verify that piping which delivers regulated substances under pressure is equipped with an automatic line leak detector. (5)(7)(8)(10)</p> <p>Verify that when other release detection methods are used, they are approved by the implementing agency. (5)(7)(8)(10)</p> |

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| COMPLIANCE CATEGORY: UST MANAGEMENT USACE ERGO | |
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>DEFERRED UST SYSTEMS</p> <p>10-27. Deferred UST systems (see definition) are required to meet specific standards (40 CFR 280.10(c) and 280.11).</p> <p>...</p> <p>DOCUMENTATION</p> <p>10-28. Facilities with USTs are required to meet specific reporting requirements (40 CFR 280.34(a)).</p> <p>...</p> <p>10-29. Facilities with USTs are required to meet specific recordkeeping requirements (40 CFR 280.34(b), 280.34(c), and 280.74).</p> <p>...</p> | <p>Verify that deferred UST systems (whether single or double-walled) are not installed to store regulated substances unless: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - releases due to corrosion or structural failure will be prevented for the operational life of the system - they are cathodically protected against corrosion, constructed of noncorrodible materials, steel clad with a noncorrodible material, or designed to prevent release - they are constructed or lined with material that is compatible with the stored substance. <p>Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum or a hazardous substance found in 40 CFR 280.60 through 280.67. (5)(7)(8)(10)</p> <p>...</p> <p>Verify that the facility has submitted the following when applicable: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - notifications of new USTs - release reports - planned or complete corrective actions - notice of closure or change-in-service. <p>...</p> <p>Verify that records are kept of the following: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used - documentation of operation of corrosion protection equipment - documentation of repairs - closure records - results of any site investigations. <p>Verify that records are available at one of the following: (5)(7)(8)(10)</p> <ul style="list-style-type: none"> - at the UST site, and immediately available for inspection - at a readily available alternative site, and provided for inspection. <p>...</p> |

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|--|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>CHANGES IN SERVICE OR CLOSURE</p> <p>10-30. USTs which are put out of service temporarily must have continued maintenance (40 CFR 280.70).</p> <p>...</p> <p>10-31. Notification must be given to the implementing agency (USEPA or state) for any closure or change-in-service 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.71(a)).</p> <p>...</p> | <p>Determine if the facility has any out-of-service USTs. (5)(7)(8)(10)(15)(16)</p> <p>Verify that proper maintenance is being performed for the following: (5)(7)(8)(10)</p> <ul style="list-style-type: none"> - corrosion protection - release detection. <p>Verify that if the UST has been out-of-service for near or over 1 yr, plans have been made for permanent closure. (5)(7)(8)(10)</p> <p>(NOTE: If the UST is empty, release detection is not required.)</p> <p>(NOTE: An empty UST is one which has no more than 2.5 cm (1 in.) of residue or less than 0.3 percent by weight of total capacity of the UST system.)</p> <p>Verify that if a UST system is closed for 3 mo or more, the vent lines are open and functioning and all other lines, pumps, manways, and ancillary equipment are capped and secured. (5)(7)(8)(10)</p> <p>Verify that if the UST has been out of service for more than 12 mo and does not meet the standards for new or upgraded USTs, it is permanently closed unless the implementing agency has provided an extension. (5)(7)(8)(10)</p> <p>...</p> <p>Determine if the facility is planning to close or change any USTs. (5)(7)(8)(10)(15)(16)</p> <p>Verify that notification of changes was given within 30 days. (5)(7)(8)(10)(15)(16)</p> <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>10-32. UST closure must be done using one of the following methods:</p> <ul style="list-style-type: none"> - it is removed from ground - it is left in place with substance removed, and filled with an inert solid material and closing it to all future outside access (40 CFR 280.71(b)). <p style="text-align: center;">...</p> | <p>Determine if there are any closed USTs or USTs in the process of being closed at the facility. (5)(7)(8)(10)(15)(16)</p> <p>Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges. (5)(7)(8)(10)(15)(16)</p> <p>Determine if there are any possible abandoned USTs and if there are plans to close off the UST in an appropriate manner. (5)(7)(8)(10)(15)(16)</p> <p>Determine if a site assessment was made to ensure that no releases to the environment have occurred by reviewing records. (5)(7)(8)(10)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>10-33. Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (40 CFR 280.71(c)).</p> <p style="text-align: center;">...</p> | <p>Determine if there are any tanks which the facility has continued to use to store a nonregulated substance (a change-in-service). (5)(7)(8)(10)(15)(16)</p> <p>Verify that prior to the change, the tank was emptied and cleaned. (5)(7)(8)(10)(15)(16)</p> <p>Verify that prior to the change, a site assessment was done. (5)(7)(8)(10)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>10-34. Prior to permanent closure or change-in-service is completed measurements must be made for the presence of a release where contamination is most likely to be present at the site (40 CFR 280.72).</p> <p style="text-align: center;">...</p> | <p>Verify that measurements for the presence of a release have been done. (5)(7)(8)(10)(15)(16)</p> <p>(NOTE: These requirements are met if one of the leak detection methods outlined in 40 CFR 280.43(e) and (f) (see checklist item 10-17).)</p> <p style="text-align: center;">...</p> |
| <p>10-35. Facilities with UST systems closed prior to 22 December 1988 must assess the excavation zone and close the UST according to current standards if releases from the UST may pose a current or potential threat to human health and the environment (40 CFR 280.73).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has any USTs which were closed prior to 22 December 1988. (5)(7)(8)(10)(15)(16)</p> <p>Verify that the excavation zone of these USTs has been assessed and cleanup done as needed. (5)(7)(8)(10)(15)(16)</p> <p style="text-align: center;">...</p> |

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|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>10-36. Excavation zone assessment records shall be maintained for 3 yr (40 CFR 280.74).</p> | <p>Verify that excavation zone assessment records are maintained for 3 yr in one of the following ways: (5)(7)(8)(10)(15)(16)</p> <ul style="list-style-type: none"> - by the facility - at the implementing agency if they cannot be maintained at the closed facility. |

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Appendix 10-1

UST Applicability Guide

| | Applicable CFR Citations | Checklist No. |
|--|--|---|
| USTs as defined in 40 CFR 280.12 (see definitions) | 40 CFR 280 | all |
| Excluded USTs (see definitions) | none | 10-11 and 10-18 |
| Deferred USTs (see definitions) | 40 CFR 280.11 | 10-27 |
| USTs storing fuel for emergency generators | 40 CFR 280.20 through 280.22 280.30 through 280.34 280.50 through 280.53 280.60 through 280.67 280.70 through 280.74 | 10-4 through 10-8 10-9 and 10-12 through 10-14, 10-28, and 10-29 10-19 through 10-20 10-21 through 10-25 10-29 through 10-36 |

Appendix 10-2

Schedule for Phase-in of Release Detection (40 CFR 280.40(c))

| Year system was installed | Year when release detection is required (by 22 December of the year indicated) | | | | |
|---------------------------------|---|------|------|------|------|
| | 1989 | 1990 | 1991 | 1992 | 1993 |
| Before 1965 or date unknown. | RD | P | | | |
| 1965-69 | | P/RD | | | |
| 1970-74 | | P | RD | | |
| 1975-79 | | P | | RD | |
| 1980-88 | | P | | | RD |

P = must begin release detection for all pressurized piping.

RD = must begin release detection for tanks and suction piping.

Appendix 10-3

Release Detection Options (40 CFR 280.43 and 280.44)

Each method of release detection for tanks and piping used to meet the requirements for petroleum UST systems must be conducted in accordance with the following:

1. Inventory control: Product inventory control must be conducted monthly to detect a release of at least 1.0 percent of flow-through, plus 130 gal [492.10 L] on a monthly basis in the following manner:

- a. inventory volume measurements for regulated substance inputs and withdrawals and the amount still remaining in the tank are recorded each operating day
- b. the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest 1/8 in. [0.32 cm]
- c. the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
- d. deliveries are made through a drop tube that extends to within 1 ft [0.30 m] of the tank bottom
- e. product dispensing is metered and recorded within the local standards of product withdrawn
- f. the measurement of any water level in the bottom of the tank is made to the nearest 1/8 in. [0.32 cm] at least once a month.

2. Manual gauging: Manual tank gauging must meet the following requirements:

- a. tank liquid level measurements are taken at the beginning and end of a period of at least 36 h during which no liquid is added to or removed from the tank
- b. level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
- c. the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest 1/8 in. [0.32 cm]
- d. a leak is suspected and subject to the requirements of subpart E if the variation between beginning and ending measurements exceeds the weekly or monthly standards of Table A on the following page
- e. only tanks of 550 gal [2081.98 L] or less nominal capacity may use this as a sole method of release detection. Tanks of 551 gal [2085.76 L] to 2000 gal [7590.82 L] may also use inventory control (see paragraph 1 in this appendix). Tanks of greater than 2000 gal nominal capacity may not use this method to meet release detection requirements.

Appendix 10-3 (continued)

Table A

| Nominal Tank Capacity | Weekly Standard (one test) | Monthly Standard (average of four) |
|-----------------------------------|-------------------------------|---------------------------------------|
| 550 gal [2081.98 L] or less | 10 gal [37.85 L] | 5 gal [18.93 L] |
| 551-1000 gal [2085.76-3785.41 L] | 13 gal [49.21 L] | 7 gal [26.50 L] |
| 1001-2000 gal [3789.20-7570.82 L] | 26 gal [98.42 L] | 13 gal [49.21 L] |

3. Tank tightness testing: Tank tightness testing must be capable of detecting a 0.1 gal/h [0.38 L/h] leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.

4. Automatic tank gauging: Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control must meet the following requirements:

- a. the automatic product level monitor test can detect a 0.2 gal/h [0.75 L/h] leak rate from any portion of the tank that routinely contains product
- b. inventory control is conducted according to requirements (see paragraph 1 above).

5. Vapor monitoring: Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:

- a. the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
- b. the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank
- c. the measurement of vapors by the monitoring device is not rendered inoperative by the groundwater, rainfall, soil moisture, or other unknown interferences so that a release could go undetected for more than 30 days
- d. the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
- e. the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system
- f. in the UST excavation zone, the site is assessed to ensure compliance with the requirements in paragraph 5, subparagraphs a-d above and to establish the number and positioning of monitor wells that will detect any releases within the excavation zone from any portion of the tank that routinely contains product
- g. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

Appendix 10-3 (continued)

6. Groundwater monitoring: Testing or monitoring for liquids in the groundwater must meet the following requirements:

- a. the regulated substance stored is immersible in water and has a specific gravity of less than 1
- b. groundwater is never more than 20 ft [6.10 m] from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/s [0.0039 in./s] (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts, or other permeable materials)
- c. the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low groundwater conditions
- e. monitoring wells shall be sealed from the ground surface to the top of the filter pack
- f. monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible
- g. the continuous monitoring devices or manual methods used can detect the presence of at least 1/8 in. [0.32 cm] of free product on top of the groundwater in the monitoring wells
- h. within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraphs 6 a-e above and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product
- i. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

7. Interstitial monitoring: Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements

- a. for double-walled systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product
- b. for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier.
 1. the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least 10^{-6} cm/s [-3×10^{-7} in./s] for the regulated substance stored) to direct a release to the monitoring point and permit its detection
 2. the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier, allowing a release to pass through undetected
 3. for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system
 4. the groundwater, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days
 5. the site is assessed to ensure that the secondary barrier is always above the groundwater and not in a 25-yr flood plain, unless the barrier and monitoring designs are for use under such conditions
 6. monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

Appendix 10-3 (continued)

- c. for tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner. The liner is compatible with the substance stored.

8. Other methods: Any other type of release detection method, or combination of methods, can be used if:

- a. it can detect a 0.2 gal/h [0.75 L/h] leak rate or a release of 150 gal [567.81 L] within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05, or
- b. the implementing agency may approve another method if it can be demonstrated that this method can detect releases as effectively as the methods listed in this appendix.

Each method of release detection for *piping*, used to meet the requirements must be conducted in accordance with the following:

1. Automatic line detectors: Methods that alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping or triggering an audible or visual alarm may be used only if they detect leaks of 3 gal/h [11.36 L/h] at 4.5 kg/cm, or 10 psi line pressure within 1 h. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.

2. Line tightness testing: A periodic test of piping may be conducted only if it can detect a 0.1 gal/h [0.38 L/h] leak once and one-half times the operating pressure.

3. Applicable tank methods: Vapor monitoring, groundwater monitoring, and interstitial monitoring may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

Section 11

Wastewater Management

SECTION 11

WASTEWATER MANAGEMENT

A. Applicability

This section includes regulations, responsibilities and compliance requirements associated with wastewater discharge at U.S. Army Corps of Engineers (USACE) facilities. Wastewater discharge can include any of the following:

- sanitary wastewater discharges directly to a receiving stream or through a Corps treatment facility
- sanitary or industrial wastewater discharge to a Publicly Owned Treatment Works (POTW) or other non-Corps facility
- stormwater runoff from operational areas of the facility to a receiving stream or water body
- industrial or storm wastewater drained to an industrial waste reservoir.

Most Corps facilities have wastewater discharge of one kind or another; therefore, this section will be applicable to most facilities.

B. Federal Legislation

- *The Federal Water Pollution Control Act*. This Act, commonly known as the *Clean Water Act (CWA)*, Public Law (PL) 100-4 (33 U.S. Code (USC) 1251-1387), was last amended 4 February 1987. The Act's intent was to restore and maintain the chemical, physical, and biological integrity of the nation's waters. This is accomplished by regulating wastewater discharged directly into navigable or surface waters and indirectly into POTW. Federal agencies are required to abide by Federal, state, and local water pollution controls both substantively and procedurally (33 USC 1323(a)). Like the *Clean Air Act (CAA)*, the CWA also provides for Presidential exemptions for executive branch agencies.
- Executive Order (EO) 12088. This EO, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations that are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

C. State/Local Regulations

- States normally have wastewater discharge legislation and regulations that require permitting similar to the National Pollution Discharge Elimination System (NPDES) program. A state is often delegated authority to administer the NPDES permits for discharges in the state. These permits are often joint permits issued pursuant to both the Federal CWA and state legislation. In some cases, the state will not administer the NPDES program and will issue a state permit even though a NPDES permit has been issued by the U.S. Environmental Protection Agency (USEPA). This dual permitting is common. The states and the USEPA normally cooperate in the permit issuance process to insure that the two permits are consistent, but there may be differences in monitoring requirements and the number of pollutants limited. These requirements normally do not conflict, but may require additional sampling and dual reporting.

States also have more stringent requirements for wastewater treatment plant operations. Many states have sewage treatment plant (STP) operator licensing and certification programs that require an operator to pass an exam and have a required amount of experience.

- Local entities (counties, cities) may also have enforceable wastewater discharge limitations that regulate discharges to a POTW. Local limitations often include pH, temperature, and concentrations of various organic and inorganic compounds. Major operations which discharge to an off site POTW will be subject to pretreatment permits issued by the POTW, the state, or the USEPA as appropriate. In some cases, another Department of Defense (DOD) activity may stipulate effluent discharge limitations for discharges to the treatment plant if the Corps facility discharges to the DOD facility.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- ER 1130-2-307, *Dredging Policies and Practices*. This regulation sets forth the policies and practices governing dredging operations.
- ER 1130-2-406, *Shoreline Management at Civil Works Projects*. This regulation specifically addresses shoreline dredging.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- NPDES Permits - Corps facilities with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without a USEPA approved NPDES permit program. Facilities that are dischargers of stormwater associated with an industrial activity are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit. Facilities must meet the sampling requirements stipulated by NPDES permits (40 CFR 122.1(b)(3) and 122.26(c)).
- POTWs - Facilities must not discharge into a POTW any pollutant that would cause *pass through* or *interference*. Facilities shall not introduce pollutants into a POTW that create a fire or explosion hazard, cause corrosive structural damage, have a pH below 5.0, or are solid or viscous enough to cause obstructions. Facilities are required to notify the POTW immediately of any discharge, including any slug loadings, that could cause problems to the POTW (40 CFR 403.5 and 403.12(f)).
- Operation and Maintenance of a POTW/Federally Owned Treatment Works (FOTW) - Personnel engaged or employed in operation and maintenance of water pollution control facilities must be trained in safety and occupational hazards. Treatment plant supervisors are required to maintain operating logs and records that are posted daily and are neat and legible. Treatment plants are required to be operated in accordance with all design parameters (TM 5-660, para 1-17 and para 18-20; 40 CFR 403.12(f)).
- Effluent Limits for Electroplating Point Sources - Facilities that have existing electroplating operations that introduce pollutants into a POTW resulting from the electroplating of common metals are subject to pretreatment standards which vary depending upon the level of discharge and the nature of the metals used (40 CFR 413).
- Effluent Limitation for Metal Finishing Point Sources - Facilities that have shops performing electroplating, electroless plating, anodizing, coating, chemical etching and milling, and printed circuit board manufacturing are subject to certain best available technology point source effluent limitations, which include the self-monitoring of cyanide. Facilities that introduce pollutants from existing metal finishing point sources into POTWs are subject to certain pretreatment standards. Facilities that introduce pollutants from new metal finishing point sources into POTWs are subject to certain performance and pretreatment standards (40 CFR 433).
- Dredging - If the facility conducts any dredging operations in waters of the United States or ocean waters, a permit must be obtained prior to beginning

operations. Before conducting or issuing a permit for dredging, facilities must ascertain the effect of such projects on natural and cultural resources. Federal facilities are prohibited from dredging shoreward of harborlines. Facilities that undertake, or issue permits for, the discharge or dumping of dredged material are required to solicit comments and information by way of public notice, concerning the probable impact of such materials (33 CFR 323.3, 324.3, 325.3, 337.1; ER 1130-2-406, para 66 and 1130-2-307, para 5).

- Land Application of Sludge - 40 CFR 503 details the pollutant concentrations, cumulative loading rates, and other restrictions pertinent to the land application of sludge which is generated during the treatment of domestic sewage in a treatment works.
- Surface Disposal of Sludge - The operation, management, monitoring, and closure of units used for the surface disposal of sewage sludge are outlined in 40 CFR 503.20 through 503.28.
- Incineration of Sewage Sludge - Facilities with incinerators that fire sewage sludge must meet specific emissions standards for beryllium and mercury emissions, and total hydrocarbons. The incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and a continuous monitoring for combustion temperature, as specified by the permitting authority. Assorted reports are required to be submitted and records kept (40 CFR 503.40 through 503.48)

F. Key Compliance Definitions

- *Active Sewage Sludge Unit* - a sewage sludge unit that has not closed (40 CFR 503.21 (a)).
- *Aerobic Digestion* - the biochemical decomposition of organic matter in sewage sludge into CO₂ and water by microorganisms in the presence of air (40 CFR 503.31(a)).
- *Agricultural Land* - land on which a food crop, a feed crop, or a fiber crop is grown. This includes range land and land used as pasture (40 CFR 503.11(a)).
- *Agronomic Rate* - the whole sludge application rate (dry weight basis) designed to provide the amount of nitrogen needed by the food crop, feed crop, fiber crop, cover crop, or vegetation grown on the land, and to minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the groundwater (40 CFR 503.11(b)).

- *Air Pollution Control Device* - one or more processes used to treat the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(a)).
- *Anaerobic Digestion* - the biochemical decomposition of organic matter in sewage sludge into methane gas and CO₂ by microorganisms in the absence of air (40 CFR 503.31(b)).
- *Annual Pollutant Loading Rate* - the maximum amount of a pollutant that can be applied to a unit area of land during a 365-day period (40 CFR 503.11(c)).
- *Annual Whole Sludge Application Rate* - the maximum amount of sewage sludge (dry weight basis) that can be applied to a unit area of land during a 365-day period (40 CFR 503.11(d)).
- *Apply Sewage Sludge or Sewage Sludge Applied To The Land* - means land application of sewage sludge (40 CFR 503.9(a)).
- *Aquifer* - a geologic formation, group of geologic formations, or a portion of a geologic formation, capable of yielding groundwater to wells or springs (40 CFR 503.21(b)).
- *Auxiliary Fuel* - fuel used to augment the fuel value of sewage sludge. This includes, but is not limited to, natural gas, fuel oil, coal, gas generated during anaerobic digestion of sewage sludge, and municipal solid waste (not to exceed 30 percent of the dry weight of sewage sludge and auxiliary fuel together). Hazardous wastes are not auxiliary fuel (40 CFR 503.41(b)).
- *Base Flood* - a flood that has a one percent chance of occurring in any given year (i.e., a flood with a magnitude equaled once in 100 yr) (40 CFR 503.9(b)).
- *Blowdown* - the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentrations in amounts exceeding limits established by the best engineering practice (40 CFR 401.11(p)).
- *Bulk Sewage Sludge* - sewage sludge that is not sold or given away in a bag or other container for application to the land (40 CFR 503.11(e)).
- *Chemical Metal Cleaning Waste* - any wastewater resulting from the cleaning of any metal process equipment with chemical compounds, including, but not limited to, boiler tube cleaning (40 CFR 423.11).
- *Class I Sludge Management Facility* - any POTW, as defined in 40 CFR 501.2, required to have an approved pretreatment program under 40 CFR 403.8(a) (including any POTW located in a state that has elected to assume local

program responsibilities pursuant to 40 CFR 403.10(e)) and any treatment works treating domestic sewage, as defined in 40 CFR 122.2, classified as a Class I sludge management facility by the USEPA Regional Administrator, or, in the case of approved state programs, the Regional Administrator in conjunction with the state Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

- *Class A Sludge* - when one of the following method is used, it is considered Class A with respect to pathogens:
 - Alternative 1. Either the density of fecal coliform in the sewage sludge shall be less than 1000 Most Probable Number (MPN)/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The temperature of the sewage sludge that is used or disposed shall be maintained at a specific value for a period of time. When the percent solids of the sewage sludge is seven percent or higher, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 20 min or longer; and the temperature and time period shall be determined using the following equation, except when small particles of sewage sludge are heated by either warmed gases or an immiscible liquid.

$$D = \frac{131,700,000}{10^{0.1400t}} \quad \text{Eq. (2)}$$

Where, D = time in days t = temperature in °C

When the percent solids of the sewage sludge is seven percent or higher and small particles of sewage sludge are heated by either warmed gases or an immiscible liquid, the temperature of the sewage sludge shall be 50 °C [122 °F] or higher; the time period shall be 15 s or longer; and the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than 7 percent and the time period is at least 15 s, but less than 30 min, the temperature and time period shall be determined using the above equation.

When the percent solids of the sewage sludge is less than seven percent; the temperature of the sewage sludge is 50 °C [122 °F] or higher; and the time period is 30 min or longer, the temperature and time period shall be determined using the below equation.

$$D = \frac{50,070,000}{10^{0.1400t}} \quad \text{Eq. (3)}$$

Where, D = time in days t = temperature in °C

- Alternative 2. Either the density of fecal coliform in the sewage sludge is less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The pH of the sewage sludge that is used or disposed shall be raised to above 12 and shall remain above 12 for 72 h.

The temperature of the sewage sludge shall be above 52 °C [125.6 °F] for 12 h or longer during the period that the pH of the sewage sludge is above 12.

At the end of the 72-h period during which the pH of the sewage sludge is above 12, the sewage sludge shall be air dried to achieve a percent solids in the sewage sludge greater than 50 percent.

- Alternative 3. Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), 503.10(c), 503.10(e), or 503.10(f).

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains enteric viruses.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is less than one Plaque-forming Unit per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses until the next monitoring episode for the sewage sludge.

When the density of enteric viruses in the sewage sludge prior to pathogen treatment is equal to or greater than one Plaque-forming Unit/4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to enteric viruses when the density of enteric viruses in the sewage sludge after pathogen treatment is less than one Plaque-forming Unit/4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the enteric virus density requirement are documented.

After the enteric virus reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to enteric viruses when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

The sewage sludge shall be analyzed prior to pathogen treatment to determine whether the sewage sludge contains viable helminth ova.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is less than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova until the next monitoring episode for the sewage sludge.

When the density of viable helminth ova in the sewage sludge prior to pathogen treatment is equal to or greater than 1 per 4 g of total solids (dry weight basis), the sewage sludge is Class A with respect to viable helminth ova when the density of viable helminth ova in the sewage sludge after pathogen treatment is less than 1 per 4 g of total solids (dry weight basis) and when the values or ranges of values for the operating parameters for the pathogen treatment process that produces the sewage sludge that meets the viable helminth ova density requirement are documented.

After the viable helminth ova reduction is demonstrated for the pathogen treatment process, the sewage sludge continues to be Class A with respect to viable helminth ova when the values for the pathogen treatment process operating parameters are consistent with the values or ranges of values documented.

- Alternative 4. Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10 (b), (c), (e), or (f).

The density of enteric viruses in the sewage sludge shall be less than one Plaque-forming Unit per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10 (b), (c), (e), or (f), unless otherwise specified by the permitting authority.

The density of viable helminth ova in the sewage sludge shall be less than one per 4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or give away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10 (b), (c), (e), or (f), unless otherwise specified by the permitting authority.

- Alternative 5. Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), (c), (e), or (f).

Sewage sludge that is used or disposed shall be treated in one of the Processes to Further Reduce Pathogens described in appendix B of 40 CFR 503.

- Alternative 6. Either the density of fecal coliform in the sewage sludge shall be less than 1000 MPN/g of total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the sewage sludge shall be less than 3 MPN/4 g of total solids (dry weight basis) at the time the sewage

sludge is used or disposed; at the time the sewage sludge is prepared for sale or given away in a bag or other container for application to the land; or at the time the sewage sludge or material derived from sewage sludge is prepared to meet the requirements in 40 CFR 503.10(b), (c), (e), or (f).

Sewage sludge that is used or disposed shall be treated in a process that is equivalent to a Process to Further Reduce Pathogens, as determined by the permitting authority (40 CFR 503.32(a)(3)).

- *Class B Sludge* - when one of the following methods is used, it is considered Class A with respect to pathogens:
 - Alternative 1. Seven samples of the sewage sludge is collected at the time the sewage sludge is used or disposed. The geometric mean of the density of fecal coliform in the samples must be less than either 2 million MPN/g of total solids (dry weight basis) or 2 million Colony Forming Units/g of total solids (dry weight basis).
 - Alternative 2. Sewage sludge that is used or disposed shall be treated in one of the Processes to Significantly Reduce Pathogens described in appendix B of 40 CFR 503.
 - Alternative 3. Sewage sludge that is used or disposed is be treated in a process that is equivalent to a Process to Significantly Reduce Pathogens, as determined by the permitting authority (40 CFR 503.32(b)).
- *Contaminate An Aquifer* - to introduce a substance that causes the maximum contaminant level for nitrate in 40 CFR 141.11 to be exceeded in groundwater or that causes the existing concentration of nitrate in groundwater to increase when the existing concentration of nitrate in the groundwater exceeds the maximum contaminant level for nitrate in 40 CFR 141.11 (40 CFR 503.21(c)).
- *CN,A* - cyanide amenable to chlorination (40 CFR 413.02).
- *CN,T* - cyanide, total (40 CFR 413.02).
- *Control Efficiency* - the mass of a pollutant in the sewage sludge fed to an incinerator minus the mass of that pollutant in the exit gas from the incinerator stack divided by the mass of the pollutant in the sewage sludge fed to the incinerator (40 CFR 503.41(c)).
- *Cover* - soil or other material used to cover sewage sludge placed on an active sewage sludge unit (40 CFR 503.21(d)).

- *Cover Crop* - a small grain crop, such as oats, wheat, or barley, not grown for harvest (40 CFR 503.9(d)).
- *Cumulative Pollutant Loading Rate* - the maximum amount of an inorganic pollutant that can be applied to an area of land (40 CFR 503.11(f)).
- *Density Of Microorganisms* - the number of microorganisms per unit mass of total solids (dry weight) in the sewage sludge (40 CFR 503.31(c)).
- *Discharge of Pollutant* - the addition of any pollutant to navigable waters from any point source and any addition of any pollutant to the waters of the contiguous zone or the ocean zone or the ocean from any point source, other than from a vessel or other floating craft (40 CFR 401.11(h)).
- *Dispersion Factor* - the ratio of the increase in the ground level ambient air concentration for a pollutant at or beyond the property line of the site where the sewage sludge incinerator is located to the mass emission rate for the pollutant from the incinerator stack (40 CFR 503.41(d)).
- *Displacement* - the relative movement of any two sides of a fault measured in any direction (40 CFR 503.21(e)).
- *Domestic Septage* - either liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that receives only domestic sewage. Domestic septage does not include liquid or solid material removed from a septic tank, cesspool, or similar treatment works that receive either commercial wastewater or industrial wastewater and does not include grease removed from a grease trap at a restaurant (40 CFR 257.2).
- *Domestic Sewage* - waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works (40 CFR 503.9(g)).
- *Dredged Material* - any material excavated or dredged from the navigable waters of the United States (33 CFR 323.2).
- *Effluent Limitations* - any restriction established by the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources, other than new sources, into navigable waters, the waters of the contiguous zone, or the ocean (40 CFR 401.11(i)).

- *Excluded Sludge* - The following are types of sludge and activities which are exempted from meeting the requirements outlined in 40 CFR 503:
 1. processes used to treat domestic sewage or processes used to treat sewage sludge prior to final use except for the standards on pathogen and vector reduction in 40 CFR 503.32 and 503.33
 2. sewage sludge co-fired in an incinerator with other wastes or for the incinerator in which sewage sludge and other waste are co-fired
 3. sludge generated at an industrial facility during the treatment of industrial wastewater, including sewage sludge generated during the treatment of industrial wastewater combined with domestic sewage
 4. sewage sludge determined to be hazardous
 5. sewage sludge with a concentration of polychlorinated biphenyls (PCBs) equal to greater than 50 mg/kg of total solids (dry weight basis)
 6. ash generated during the firing of sewage sludge in a sewage sludge incinerator
 7. grit (i.e., sand, gravel, cinders, or other material with high specific gravity) or screenings (e.g., relatively large materials such as rags) generated during preliminary treatment of domestic sewage in a treatment works
 8. sludge generated during the treatment of either surface water or groundwater used for drinking water
 9. commercial septage, industrial septage, a mixture of domestic septage and commercial septage, or a mixture of domestic septage and industrial septage (40 CFR 503.6).
- *Fault* - a fracture or zone of fractures in any materials along which strata on one side are displaced with respect to strata on the other side (40 CFR 503.21(f)).
- *Feed Crops* - crops produced primarily for consumption by animals (40 CFR 503.9(j)).
- *Fiber Crops* - crops such as flax and cotton (40 CFR 503.9(k)).
- *Final Cover* - the last layer of soil or other material placed on a sewage sludge unit at closure (40 CFR 503.21(g)).
- *Fluidized Bed Incinerator* - an enclosed device in which organic matter and inorganic matter in sewage sludge are combusted in a bed of particles suspended in the combustion chamber gas (40 CFR 503.41(e)).
- *Forest* - a tract of land thick with trees and underbrush (40 CFR 503.11(g)).

- *Good Management Practices (GMPs)* - methods, measures, or practices to prevent or reduce water pollution, including, but not limited to, structural and nonstructural controls, and operation and maintenance procedures. GMPs may be applied before, during, or after pollution-producing activities in order to reduce or eliminate the introduction of pollutants into water bodies.
- *Holocene Time* - the most recent epoch of the Quaternary period, extending from the end of the Pleistocene epoch to the present (40 CFR 503.21(h)).
- *Hourly Average* - the arithmetic mean of all measurements, taken during an hour. At least two measurements must be taken during the hour (40 CFR 503.41(f)).
- *Incineration* - the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device (40 CFR 503.41(g)).
- *Indirect Discharge* - the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c), or (d) of the CWA (40 CFR 403.3(g)).
- *Industrial Activities* - in relation to stormwater runoff, industrial activities include:
 1. facilities subject to stormwater effluent limitations guidelines, new source performance standards under 40 CFR 122 subchapter N
 2. facilities classified as Standard Industrial Classification 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323) 35, 344, and 373
 3. facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations and oil and gas explorations, production, processing, or treatment operations, or transmission facilities that discharge stormwater contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate product, finished products, byproducts or waste products located on the site of such operations
 4. hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under *Resource Conservation and Recovery Act, Subtitle C (RCRA-C)*
 5. landfills, land application sites, and open dumps that receive or have received industrial wastes, including those sites that are subject to Federal regulation
 6. facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but not limited to those classified as Standard Industrial Classification 5015 and 5093

7. steam electric power generating facilities, including coal handling sites
8. transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25, 43, 44, 45, and 5171) that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations
9. treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludges that are located within the confines of the facility with a design flow of 1.0 mg/day or more, or required to have an approved pretreatment program. Not included are farmlands, domestic gardens, or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA
10. construction activity including clearing, grading, and excavation activities except operations that result in the disturbance of land less than 5 acres [20,232.78 m²] of total land area which are not part of a larger common plan of development or sale
11. facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-25, (which are not otherwise included in categories 1 - 10) (40 CFR 122.26(b)(14)(i) through 122.26(b)(14)(xi)).

- *Industrial User* - a source of indirect discharge (40 CFR 403.3(h)).
- *Industrial Wastewater* - wastewater generated in a commercial or industrial process (40 CFR 503.9(n)).
- *Integrated Facility* - a facility that performs electroplating as only one of several operations necessary for manufacture of a product at a single physical location and has significant quantities of process wastewater from nonelectroplating sources (40 CFR 413.02).
- *Interference* - a discharge which, alone or in conjunction with one or more discharges from other sources inhibits or disrupts the POTW and causes a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(i)).
- *Job Shop* - a facility which owns not more than 50 percent (annual area basis) of the materials undergoing metal finishing (40 CFR 433.11).
- *Land Application* - the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the

incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil (40 CFR 503.11(h)).

- *Land With A High Potential For Public Exposure* - land that the public uses frequently. This includes, but is not limited to, a public contact site and a reclamation site located in a populated area (e.g., a construction site located in a city) (40 CFR 503.31(d)).
- *Land With A Low Potential For Public Exposure* - land the public uses infrequently. This includes, but is not limited to, agricultural land, forest, and a reclamation site located in an unpopulated area (e.g., a strip mine located in a rural area) (40 CFR 503.31(e)).
- *Leachate Collection System* - a system or device installed immediately above a liner that is designed, constructed, maintained, and operated to collect and remove leachate from a sewage sludge unit (40 CFR 503.21(i)).
- *Liner* - soil or synthetic material that has a hydraulic conductivity of 1×10^{-7} cm/s [3×10^{-8} in./s] or less (40 CFR 503.21(j)).
- *Lower Explosive Limit For Methane Gas* - the lowest percentage of methane gas in air, by volume, that propagates a flame at 25 °C [77 °F] and atmospheric pressure (40 CFR 503.21(k)).
- *Marine Sanitation Device* - includes any equipment for installation on board a vessel, and which is designed to receive, retain, treat, or discharge sewage and any process to treat such sewage (ER 1125-2-302, para 5b).
- *Metal Cleaning Wastes* - any wastewater resulting from cleaning (with or without chemical cleaning compounds) any metal process equipment, including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning (40 CFR 423.11).
- *Monthly Average* - the arithmetic mean of the hourly averages for the hours a sewage sludge incinerator operates during the month (40 CFR 503.41(h)).
- *Monthly Average* - the arithmetic mean of all measurements taken during the month (40 CFR 503.11(i)).
- *Municipality* - a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities: created by or under state law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the

CWA, as amended. The definition includes a special district created under state law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201(e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use, or disposal of sewage sludge (40 CFR 503.9(o)).

- *National Pretreatment Standard* - any regulation containing pollutant discharge limits promulgated by the USEPA (40 CFR 403.3(j)).
- *Navigable Waters* - all navigable waters of the United States, tributaries of navigable waters of the United States, interstate waters, intrastate lakes, rivers, and streams which are utilized by interstate travelers for recreational or other purposes, intrastate lakes, rivers, and streams from which fish or shellfish are taken and sold in interstate commerce and intrastate lakes, rivers, and streams which are utilized for industrial purposes by industries in interstate commerce. Navigable waterways do not include prior converted cropland (40 CFR 401.11(l)).
- *New Source* - any building, structure, facility, or installation from which there is or may be the discharge of pollutants, the construction of which is commenced after the publication of proposed regulations prescribing a standard of performance under Section 306 of the CWA, which will be applicable to such source if such standards are thereafter promulgated in accordance with Section 306 of the Act (40 CFR 401.11(e)).
- *Noncontact Cooling Water* - the water that is contained in a leak-free system, i.e., no contact with any gas, liquid, or solid other than the container for transport; the water shall have no net poundage addition of any pollutant over intake water levels (40 CFR 401.44(o)).
- *NPDES Permit* - a permit granted by the USEPA to a direct discharger which permits wastewater discharge to a watercourse in accordance with the conditions of the permit. NPDES means National Pollutant Discharge Elimination System (40 CFR 403.3(l)).
- *Other Container* - either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of 1 metric ton [0.98 long tons] or less (40 CFR 503.11(j)).
- *pH* - the logarithm of the reciprocal of the hydrogen ion concentration (40 CFR 503.31(g)).

- *Pass Through* - a discharge that exits the POTW into waters in quantities or concentrations which, alone or in conjunction with one or more discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (40 CFR 403.3(n)).
- *Pasture* - land on which animals feed directly on feed crops such as legumes, grasses, grain stubble, or stover (40 CFR 503.11(k)).
- *Pathogenic Organisms* - disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova (40 CFR 503.31(f)).
- *Person* - an individual, association, partnership, corporation, municipality, state or Federal agency, or an agent or employee thereof (40 CFR 503.9(q)).
- *Person Who Prepares Sewage Sludge* - either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge (40 CFR 503.9(r)).
- *Place Sewage Sludge or Sewage Sludge Placed* - means disposal of sewage sludge on a surface disposal site (40 CFR 503.9(s)).
- *Point Source* - any discernible confined and discrete conveyance, including, but not limited to, a pipe, ditch, channel, or conduit from which pollutants are or may be discharged (40 CFR 401.11(d)).
- *Pretreatment* - the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, discharging, or otherwise introducing such pollutants into a POTW (40 CFR 403.3(q)).
- *Process Wastewater* - any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, or waste product (40 CFR 401.44(q)).
- *Public Contact Site* - land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses (40 CFR 503.11(l)).
- *Publicly Owned Treatment Works (POTW)* - a treatment works which is owned by the state or a municipality. This includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances, only if they convey waste to a POTW (40 CFR 403.3(o)).

- *Qualified Groundwater Scientist* - an individual with a baccalaureate or post-graduate degree in the natural sciences or engineering who has sufficient training and experience in groundwater hydrology and related fields, as may be demonstrated by state registration, professional certification, or completion of accredited university programs, to make sound professional judgments regarding groundwater monitoring, pollutant fate and transport, and corrective action (40 CFR 503.21(l)).
- *Range Land* - open land with indigenous vegetation (40 CFR 503.11(m)).
- *Reclamation Site* - drastically disturbed land that is reclaimed using sewage sludge. This includes, but is not limited to, strip mines and construction sites (40 CFR 503.11(n)).
- *Risk Specific Concentration* - the allowable increase in the average daily ground level ambient air concentration for a pollutant from the incineration of sewage sludge at or beyond the property line of the site where the sewage sludge incinerator is located (40 CFR 503.41(i)).
- *Runoff* - rainwater, leachate, or other liquid that drains overland on any part of a land surface and runs off of the land surface (40 CFR 503.9(v)).
- *Seismic Impact Zone* - an area that has a 10 percent or greater probability that the horizontal ground level acceleration of the rock in the area exceeds 0.10 gravity once in 250 yr (40 CFR 503.21(m)).
- *Sewage Sludge* - solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage, scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludges in a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewerage in a treatment works (40 CFR 257.2).
- *Sewage Sludge Feed Rate* - either the average daily amount of sewage sludge fired in all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located for the number of days in a 365-day period that each sewage sludge incinerator operates, or the average daily design capacity for all sewage sludge incinerators within the property line of the site where the sewage sludge incinerators are located (40 CFR 503.41(j)).
- *Sewage Sludge Incinerator* - an enclosed device in which only sewage sludge and auxiliary fuel are fired (40 CFR 503.41(k)).

- *Sewage Sludge Unit* - land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States (40 CFR 503.21(N)).
- *Sewage Sludge Unit Boundary* - the outermost perimeter of an active sewage sludge unit (40 CFR 503.21(o)).
- *Specific Oxygen Uptake Rate (SOUR)* - the mass of oxygen consumed per unit time per unit mass of total solids (dry weight basis) in the sewage sludge (40 CFR 503.31(h)).
- *Stack Height* - the difference between the elevation of the top of a sewage sludge incinerator stack and the elevation of the ground at the base of the stack when the difference is equal to or less than 65 m [213.25 ft]. When the difference is greater than 65 m [213.25 ft], stack height is the creditable stack height determined in accordance with 40 CFR 51.100(i) (40 CFR 503.41(l)).
- *Store or Storage Of Sewage Sludge* - the placement of sewage sludge on land on which the sewage sludge remains for 2 yr or less. This does not include the placement of sewage sludge on land for treatment (40 CFR 503.9(y)).
- *Stormwater* - Stormwater runoff, snow melt runoff, and surface runoff and drainage (40 CFR 122.26(b)(14)).
- *Stormwater Discharge Associated With Industrial Activity* - the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant. This term does not include discharges already excluded from the NPDES permit program. For the categories in 1. through 10. (see definition of Industrial Activities), the term includes, but is not limited to; stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers or raw materials, manufactured products, waste materials, or byproducts used or created by the facility; material handling sites; refuse sites; sites used for application or the disposal of process waste waters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain that are exposed to stormwater. For category 11., the term only includes stormwater discharges from all the areas (except access roads and rail lines) that are listed above where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, byproducts, or industrial machinery are exposed to stormwater (40 CFR 122.26(b)(14)).

- *Strong Chelating Agents* - all compounds which, by virtue of their chemical structure and amount present, form soluble metal complexes which are not removed by subsequent metals control techniques such as pH adjustment followed by clarification or filtration (40 CFR 413.02).
- *Surface Disposal Site* - an area of land that contains one or more active sewage sludge units (40 CFR 503.21(p)).
- *TTO* - total toxic organics (40 CFR 413.02).
- *Total Hydrocarbons* - the organic compounds in the exit gas from a sewage sludge incinerator stack measured using a flame ionization detection instrument referenced to propane (40 CFR 503.41(m)).
- *Total Metal* - the sum of the concentrations of mass of copper, nickel, chromium, and zinc (40 CFR 413.02).
- *Total Solids* - the materials in sewage sludge that remain as residue when the sewage sludge is dried at 103 to 105 °C [217.4 to 221 °F] (40 CFR 503.31(i)).
- *Treat or Treatment Of Sewage Sludge* - the preparation of sewage sludge for final use or disposal. This includes, but is not limited to, thickening, stabilization, and dewatering of sewage sludge. This does not include storage of sewage sludge (40 CFR 503.9(z)).
- *Treatment Works* - either a federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste of a liquid nature (40 CFR 503.9(aa)).
- *Type I Marine Sanitation Device (MSD)* - a *nonflow-through* MSD certified by the U.S. Coast Guard and capable of producing an effluent with a fecal coliform bacterial count of not more than 1000/100 mL and no visible floating solids (ER 1125-2-302, para 5d).
- *Type II MSD* - a *flow-through* MSD certified by the U.S. Coast Guard and capable of producing an effluent with a fecal coliform bacterial count of not more than 200/100 mL and total suspended solids of not more than 150 mg/L [(ER 1125-2-302, para 5d).
- *Type III A MSD* - a *nonflow-through* MSD certified by the U.S. Coast Guard and designed to treat and hold the treated sewage. This type includes low volume or recirculating flush devices which ultimately evaporate or incinerate the sewage to a sterile sludge or ash. The coliform bacterial count of recirculated flush media must not exceed 200/mL (ER 1125-2-302, para 5d).

- *Type III B MSD* - a nonflow-through collection, holding and transfer (CHT) system, including piping, holding tanks, pumps, valves, and shoreside connectors. A Type III B device used solely for storage of sewage and flush water at ambient pressure and temperature is considered certified (ER 1125-2-302, para 5d).
- *Unstabilized Solids* - organic materials in sewage sludge that have not been treated in either an aerobic or anaerobic treatment process (40 CFR 503.31(j)).
- *Unstable Area* - land subject to natural or human-induced forces that may damage the structural components of an active sewage sludge unit. This includes, but is not limited to, land on which the soils are subject to mass movement (40 CFR 503.21(q)).
- *Vector Attraction* - the characteristic of sewage sludge that attracts rodents, flies, mosquitos, or other organisms capable of transporting infectious agents (40 CFR 503.31(k)).
- *Volatile Solids* - the amount of the total solids in sewage sludge lost when the sewage sludge is combusted at 550 °C [1022 °F] in the presence of excess air (40 CFR 503.31(l)).
- *Waters of the United States* - this term includes:
 1. all waters which are currently used or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide
 2. all interstate waters including interstate wetlands
 3. all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - a. which are or could be used by interstate or foreign travelers for recreational or other purposes
 - b. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce, or
 - c. which are used or could be used for industrial purposes by industries in interstate commerce
 4. all impoundments of waters otherwise defined as waters of the United States under this definition
 5. tributaries of waters described above
 6. the territorial seas
 7. wetlands adjacent to waters, other than waters that are, in themselves, wetlands, as outlined above in this definition (33 CFR 326).

- *Wet Electrostatic Precipitator* - an air pollution control device that uses both electrical forces and water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(n)).
- *Wetlands* - those areas that are inundated or saturated by surface water or groundwater at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (40 CFR 503.9(bb)).
- *Wet Scrubber* - an air pollution control device that uses water to remove pollutants in the exit gas from a sewage sludge incinerator stack (40 CFR 503.41(o)).
- *Vessel* - includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on waters of the United States (33 CFR 153.104).

WASTEWATER MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|---|---------------------------------|--|
| All Facilities | 11-1 through 11-4 | (5)(6)(10)(15)(16) |
| NPDES Permits | 11-5 through 11-10 | (5)(6)(7)(10)(13)(15)(16) |
| Discharges to POTWs | 11-11 through 11-13 | (15)(16) |
| POTW Operations | 11-14 through 11-16 | (5)(15)(16) |
| Effluent Limitations | | |
| Electroplating Point Sources | 11-17 through 11-23 | (5)(15)(16) |
| Metal Finishing Point Sources | 11-24 and 11-25 | (5)(15)(16) |
| Existing Metal Finishing Point Sources | 11-26 | (5)(15)(16) |
| New Metal Finishing Point Sources | 11-27 and 11-28 | (5)(15)(16) |
| Dredging | 11-29 through 11-35 | (7)(10)(15)(16) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

WASTEWATER MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS (continued)

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|--------------------------------|---------------------------------|--|
| Land Application of Sludge | | |
| General | 11-36 through 11-42 | (7)(10)(15)(16) |
| Vectors and Pathogens | 11-43 through 11-47 | (7)(10)(15)(16) |
| Notifications | 11-48 through 11-52 | (10)(15)(16) |
| Monitoring | 11-53 and 11-54 | (10)(15)(16) |
| Recordkeeping and Reporting | 11-55 through 11-62 | (10)(15)(16) |
| Surface Disposal of Sludge | | |
| General | 11-63 through 11-69 | (10)(15)(16) |
| Monitoring and Documentation | 11-70 through 11-75 | (10)(15)(16) |
| Sludge Incineration | 11-76 through 11-83 | (10)(15)(16) |

(a)CONTACT/LOCATION CODE:

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- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
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- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

WASTEWATER MANAGEMENT

Records to Review

- NPDES Permits
- NPDES Permit renewal applications (if expire within 180 days)
- Discharge monitoring reports for the past year
- Laboratory records and procedures and USEPA quality assurance (QA) results
- Monthly operating reports for wastewater treatment facilities
- Flow monitoring calibration certification and supporting records
- Ash pond volume certification and supporting records
- Red water inspection records
- Special reports, certifications, etc., required by NPDES permit
- Spill Prevention Control and Countermeasure (SPCC) Plan
- All records required by SPCC Plan
- Oil transfer manual (33 CFR 154 and 156)
- All notices of noncompliance
- All notices of violations
- NPDES state or Federal inspection reports
- Sewage treatment plant operator certification
- Administrative Orders
- Sewer and storm drain layout
- Local sewer ordinance
- Local service use permit
- Notification to local POTW
- Old Spill Reports
- Repair/Maintenance records for the wastewater treatment system
- As Built drawings
- Federal compliance agreements
- Pretreatment permits

Physical Features to Inspect

- Discharge outfall pipes
- Wastewater treatment facilities
- Industrial treatment facilities
- Streams, rivers, open waterways
- Floor and sink drains (especially in industrial areas)
- Storm water collection points (especially in industrial areas)
- Oil storage tanks
- Oil/water separators

People to Interview

- Environmental Compliance Coordinator (ECC)
- Natural Resources Management
- Operations
- Planning
- Project Resource Manager
- Facility Managers

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. This chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 11-1 through 11-3 | 11-1 through 11-3 |
| 11-4 | deleted |
| no match | 11-4 |
| 11-5 through 11-31 | 11-5 through 11-31 |
| 11-32 | deleted |
| 11-33 through 11-36 | 11-32 through 11-35 |
| no match | 11-36 through 11-83 |

| | | | |
|-------------------------|---|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: WASTEWATER MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action, C - In Compliance

**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>ALL FACILITIES</p> <p>11-1. Determine actions or changes since previous review of wastewater discharge (GMP).</p> <p>...</p> <p>11-2. The facility should have access to current regulations on wastewater discharge requirements (USEPA, engineering, and state requirements) (GMP).</p> <p>...</p> | <p>Determine, by examining a copy of the previous review report, if non-compliance issues have been resolved. (5)(6)(10)(15)(16)</p> <p>...</p> <p>Determine if copies of the following are available at the facility or district or division office: (5)(15)(16)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance With Pollution Control Standards</i>. - 33 CFR 323, <i>Permits for Discharges of Dredged or Fill Materials into Waters of the United States</i>. - 33 CFR 324, <i>Permits for Ocean Dumping of Dredged Materials</i>. - 33 CFR 325, <i>Processing of Department of the Army Permits</i>. - 33 CFR 337, <i>Practice and Procedure</i>. - 40 CFR 122, <i>NPDES Permits Regulations</i>. - 40 CFR 136, <i>Test Procedures for the Analysis of Pollutants</i>. - 40 CFR 403, <i>General Pretreatment Regulations for Existing and New Sources</i>. - 40 CFR 413, <i>Electroplating Point Source Category</i>. - 40 CFR 433, <i>Metal Finishing Point Source Category</i>. - 40 CFR 503, <i>Standards for Use or Storage of Sewage Sludge</i>. - EM 385-1-1, <i>Safety and Health Requirements Manual</i>, October 1992. - ER 1130-2-307, <i>Dredging Policies and Practices</i>, 31 October 1968. - ER 1130-2-406, <i>Lakeshore Management at Civil Works Projects</i>, 13 December 1974. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - TB MED 576, <i>Sanitary Control and Surveillance of Water Supplies at Fixed Installations</i>, March 1982. - TM 5-660, <i>Maintenance and Operation of Water Supply, Treatment, and Distribution Systems</i>. - Applicable state and local regulations. <p>...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>11-3. Facilities are required to comply with state and local water quality regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> <p>...</p> | <p>Verify that the facility is complying with state and local water quality requirements. (5)</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies. (5)</p> <p>(NOTE: Issues typically regulated by state and local agencies include.</p> <ul style="list-style-type: none"> - nonpoint sources - NPDES permits - wastewater - monitoring and recordkeeping for NPDES permitted sources - certification requirements for laboratories analyzing samples - wastewater treatment plant operator certification - sludge disposal - pretreatment standards - leachate from shooting ranges - discharges to sewage treatment facilities - industrial wastewater - contamination from projections occurring over waterways (i.e., gate painting) - septic tanks - stormwater pollution prevention plans - stormwater discharges.) <p>...</p> |
| <p>11-4. When sanitary sewers are not available, alternate facilities are required to be provided (EM 385-1-1, para 02.B.01 and EM 1110-1-400).</p> <p>...</p> | <p>Verify that, unless prohibited by local codes, one of the following is provided when sanitary sewers are not available: (5)</p> <ul style="list-style-type: none"> - chemical toilets - recirculating toilets - combustion toilets. <p>Verify that at recreation areas the following are used if allowed by state/local code: (5)</p> <ul style="list-style-type: none"> - vaults - pits - sand filter and waterless composting. <p>...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>NPDES PERMITS</p> <p>11-5. Corps facilities with point source discharges and/or treatment works treating domestic sewage are required to have a Federal NPDES permit if located in states without a USEPA-approved NPDES permit program (40 CFR 122.1(b)(3)).</p> <p>...</p> <p>11-6. Facilities that are dischargers of stormwater associated with an industrial activity (see definitions) are required to apply for an individual permit, apply for a permit through a group application, or seek coverage under a promulgated stormwater general permit (40 CFR 122.26(c)).</p> <p>...</p> | <p>Determine if the facility is located in a state with an USEPA-approved NPDES permit program. (5)(15)(16)</p> <p>Verify that the facility has obtained the proper permits for point source discharges and/or treatment works treating domestic sewage. (5)(15)(16)</p> <p>Verify that the facility is operating according to permit requirements such as: (5)(15)(16)</p> <ul style="list-style-type: none"> - monitoring/sampling - concentrations of discharge constituents - recordkeeping - reports. <p>(NOTE: The USEPA may require the facility to have a permit for the use/disposal of sewage sludge as necessary to protect public health.)</p> <p>(NOTE: Stormwater runoff may be addressed in the NPDES permit.)</p> <p>...</p> <p>Determine if the facility is discharging stormwater associated with an industrial activity. (5)(15)(16)</p> <p>Verify that an application has been submitted for a permit. (5)(15)(16)</p> <p>...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>11-7. Samples must be collected in accordance with proper collection procedures in <i>Standard Methods for Water Analysis</i> (40 CFR 136.63).</p> <p>...</p> | <p>Verify that: (10)(13)(15)(16)</p> <ul style="list-style-type: none"> - proper sample containers are used - samples are refrigerated during compositing - proper preservation techniques are used - flow-proportioned samples are obtained where required by permit - sample holding times prior to analyses conform with requirements - the chain of custody is maintained from sampling point through analytic testing to results (essential if litigation occurs). <p>Determine if monitoring and analysis are performed more frequently than permits require. (10)(13)(15)(16)</p> <p>Verify that results are reported in the facility's self-monitoring report. (10)(13)(15)(16)</p> <p>...</p> |
| <p>11-8. Analytical testing must be done in accordance with USEPA-approved analytical procedures (40 CFR 136.3).</p> <p>...</p> | <p>Determine if: (10)(13)(15)(16)</p> <ul style="list-style-type: none"> - a USEPA-approved analytical testing lab was used - proper approval was obtained from the state/USEPA if alternate analytical procedures are used - parameters other than those required by the permit are analyzed - satisfactory calibration and maintenance of instruments and equipment is done - quality control procedures are used - duplicate samples are analyzed - spiked samples are used - a commercial laboratory is used - the commercial laboratory is state certified (states with formal certification program). <p>...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>11-9. Each permitted discharge point should be free of contaminants/pollutants (GMP).</p> <p>...</p> <p>11-10. Even where not covered by NPDES permits, stormwater discharge on the facility should be uncontaminated, and periodic surveillance of these discharges should be completed (GMP).</p> <p>...</p> | <p>Observe each permitted effluent discharge point on the facility. Note the appearance, odors, or other observed characteristics (oil sheen, visible foam, visible floating solids, color). (15)(16)</p> <p>...</p> <p>Determine which drains at the facility are connected to the storm sewer and the location of all outfalls and discharge points. (6)(7)(10)(13)(15)(16)</p> <p>Determine if areas of stormwater discharge have physical evidence of contamination (oil sheen, discoloration, etc.). (6)(7)(10)(13)(15)(16)</p> <p>Verify that oil/water separators connected to the storm sewer on the facility are operating properly and maintained correctly. (6)(7)(10)(13)(15)(16)</p> <p>Determine if major industrial shops or industrial areas have physical evidence of contaminated waste streams discharging to floor drains, storm systems, or catch basins. Key shops to be visited include: (6)(7)(10)(13)(15)(16)</p> <ul style="list-style-type: none"> - battery shop - corrosion control - engine shop - motor pool - paint shop - plating shop - pesticide shops - petroleum, oils, and lubricants (POL) area. <p>...</p> |
| <p>DISCHARGES TO POTWs</p> <p>11-11. Facilities must not discharge into a POTW any pollutant that would cause <i>pass through</i> or <i>interference</i> (40 CFR 403.5(a) and 403.5(c)(2)).</p> <p>...</p> | <p>Determine the following: (15)(16)</p> <ul style="list-style-type: none"> - what point source discharges are at the installation - which drains in the installation lead to the treatment works - what personnel pour down the drains leading to the treatment works - what types of materials are located in areas where spills may reach the drains to the treatment works. <p>Verify that the facility is not discharging, to a POTW, pollutants that would cause a <i>pass through</i> or <i>interference</i>. (15)(16)</p> <p>Identify any pretreatment standards or reporting requirements imposed upon the facility by the POTW and verify that they are being met. (15)(16)</p> <p>...</p> |

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| <p>11-12. Facilities are required not to introduce specific pollutants into a POTW (40 CFR 403.5 (b)).</p> | <p>Verify that pollutants that create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than 140 °F (60 °C), are not being discharged from the facility to a POTW. (15)(16)</p> <p>Verify that pollutants that will cause corrosive structural damage to the POTW are not being discharged from the facility to a POTW. (15)(16)</p> <p>Verify that in no case are discharges released with a pH below 5.0. (15)(16)</p> <p>Verify that solid or viscous pollutants in amounts that will cause obstruction to the flow are not being discharged to the POTW. Examples are: (15)(16)</p> <ul style="list-style-type: none"> - debris from fish cleaning stations - pieces of metal, rubber, and wood from shops - sand and sediment. <p>Verify that no pollutants, including oxygen demand pollutants, are released at a flow rate or concentration that will cause interference with the POTW. (15)(16)</p> <p>Verify that heat in amounts that would inhibit biological activity at the POTW, resulting in interference, is not discharged. Examples are: (15)(16)</p> <ul style="list-style-type: none"> - scrubber water - boiler blowdown. <p>(NOTE: In no case will the temperature of discharges result in a temperature at the POTW of greater than 40 °C (104 °F).)</p> <p>Verify that petroleum, oil, nonbiodegradable cutting oil, or products of mineral oil origin are not discharged in amounts that would result in a pass through or interference (specifically check maintenance areas). (15)(16)</p> <p>Verify that pollutants that would result in the presence of toxic gases, vapors, or fumes within the POTW in quantities that would cause acute worker health and safety problems are not discharged. (15)(16)</p> <p>Verify that no trucked or hauled pollutants are discharged except at discharge points designated by the POTW. (15)(16)</p> <p>Determine if the facility has been granted any exemptions or variances concerning its discharges. (15)(16)</p> |

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| <p>11-13. Facilities are required to notify the POTW immediately of any discharge, including any slug loadings, that could cause problems to the POTW (40 CFR 403.12(f)).</p> <p style="text-align: center;">...</p> | <p>Verify that personnel at the facility are aware of the need to notify the POTW of any discharge that would cause problems. (15)(16)</p> <p style="text-align: center;">...</p> |
| <p>POTW OPERATIONS</p> <p>11-14. Personnel engaged or employed in operation and maintenance of water pollution control facilities must be trained in safety and occupational hazards (TM 5-660, para 1-17).</p> <p style="text-align: center;">...</p> | <p>Determine, by interviewing operating/maintenance staff at the plant, if periodic refresher training is conduct. (5)(15)(16)</p> <p>Verify, by reviewing operating staff training records, that training is conducted. (15)(16)</p> <p style="text-align: center;">...</p> |
| <p>11-15. Treatment plant supervisors are required to maintain certain operating logs and records (TM 5-660, para 18-20).</p> <p style="text-align: center;">...</p> | <p>Verify that the plant supervisor for a domestic wastewater plant maintains logs and records. (15)(16)</p> <p>Verify that forms are posted daily and are neat and legible. (15)(16)</p> <p>Verify that copies are distributed as follows: (15)(16)</p> <ul style="list-style-type: none"> - original retained by facility - required copies submitted to state. <p style="text-align: center;">...</p> |
| <p>11-16. Treatment plants are required to be operated in accordance with all design parameters (TB MED 576).</p> <p style="text-align: center;">...</p> | <p>Determine, by interviewing the plant supervisor, if any instances have occurred when readings exceeded maximum limits, the causes of the excess, and the remedial action taken. (15)(16)</p> <p>Determine if there have been instances of effluent bypasses and if regulatory agencies were notified. (15)(16)</p> <p>Determine if there have been instances and the causes of any hydraulic and/or organic overloads at the plant. (15)(16)</p> <p style="text-align: center;">...</p> |

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|---|---|
| <p>EFFLUENT LIMITATIONS</p> <p>Electroplating Point Sources</p> <p>11-17. Facilities that have electroplating operations are subject to certain point source effluent limitations (40 CFR 413.01(a) through 413.01(c) and 413.04).</p> <p>...</p> <p>11-18. Facilities that have existing sources that introduce pollutants into a POTW and that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals are subject to certain pretreatment standards (40 CFR 413.10, 413.14(a), 413.14 (b), and 413.14(f)).</p> <p>...</p> | <p>Determine if the facility has electroplating operations. (5)(15)(16)</p> <p>(NOTE: See Appendix 11-1 for similar, but excepted, operations.)</p> <p>Verify that pretreated pollutants standards are measured by determining the relevant subcategory from the corresponding daily and 4-day average values listed in Table 1 in Appendix 11-1. (5)(15)(16)</p> <p>Verify that where electroplating process wastewaters are combined with regulated wastewaters that have 30-day average standards, the corresponding 30-day average standard for electroplating is used. (5)(15)(16)</p> <p>...</p> <p>(NOTE: Electroplating of common metals refers to electroplating with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or any combination of these.)</p> <p>Determine if the facility has existing sources that discharge less than 38,000 L (10,000 gal) per calendar day in process wastewaters resulting from the electroplating of common metals into a POTW. (5)(15)(16)</p> <p>Verify that the source's wastewater meets the limitations listed in Table 2 of Appendix 11-1. (5)(15)(16)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>Verify that the source's wastewater TTO is limited to 4.57 mg/L maximum for any 1 day. (5)(15)(16)</p> <p>...</p> |

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| <p>11-19. Facilities that have existing sources that introduce pollutants into a POTW and that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from the electroplating of common metals are subject to certain pretreatment standards (40 CFR 413.10, 413.14(a), 413.14(c) through 413.14(e), and 413.14(g)).</p> | <p>(NOTE: Electroplating of common metals refers to electroplating with copper, nickel, chromium, zinc, tin, lead, cadmium, iron, aluminum, or any combination of these.)</p> <p>Determine if the facility has existing sources that discharge 38,000 L (10,000 gal) or more per calendar day in process wastewaters resulting from the electroplating of common metals into a POTW. (5)(15)(16)</p> <p>Verify that the source's wastewater meets the limitations listed in Table 3 of Appendix 11-1. (5)(15)(16)</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Table 3 upon prior agreement between the facility and the POTW receiving the wastes.)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, after reduction of hexavalent chromium wastes and after neutralization using calcium oxide (or hydroxide), the limitations, listed in Table 4 of Appendix 11-1, are met. (5)(15)(16)</p> <p>Verify that the source's wastewater TTO is limited to 2.13 mg/L maximum for any 1 day. (5)(15)(16)</p> |
| <p>11-20. Facilities that have existing sources that introduce pollutants into a POTW and that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from chromating, phosphating, or immersion plating on ferrous or nonferrous materials are subject to certain pretreatment standards (40 CFR 413.50, 413.54(a), 413.54(b), and 413.54(f)).</p> | <p>Determine if the facility has existing sources that discharge less than 38,000 L (10,000 gal) per calendar day in process wastewaters resulting from chromating, phosphating, or immersion plating on ferrous or nonferrous materials into a POTW. (5)(15)(16)</p> <p>Verify that the source's wastewater meets the limitations listed in Table 2 of Appendix 11-1. (5)(15)(16)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>Verify that the source's wastewater TTO is limited to 4.57 mg/L maximum. (5)(15)(16)</p> |

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| <p>11-21. Facilities that have existing sources that introduce pollutants into a POTW that discharges 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from chromating, phosphating, or immersion plating on ferrous or non-ferrous materials are subject to certain pretreatment standards (40 CFR 413.50, 413.54(a), 413.54(c) through 413.54(e), and 413.54(g)).</p> | <p>Determine if the facility has existing sources that discharge 38,000 L (10,000 gal) or more per calendar day in process wastewaters resulting from chromating, phosphating, or immersion plating into a POTW. (5)(15)(16)</p> <p>Verify that the source's wastewater meets the limitations listed in Table 3 of Appendix 11-1. (5)(15)(16)</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Table 3 upon prior agreement between the facility and the POTW receiving the wastes.)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide), the limitations, listed in Table 4 of Appendix 11-1, are met. (5)(15)(16)</p> <p>Verify that the source's wastewater TTO is limited to 2.13 mg/L maximum for any 1 day. (5)(15)(16)</p> |
| <p>11-22. Facilities that have existing sources that introduce pollutants into POTWs that discharge less than 38,000 L (10,000 gal) per calendar day of pollutants in process wastewaters resulting from electroless plating are subject to certain pretreatment standards (40 CFR 413.70, 413.74(a), 413.74(b), and 413.74(f)).</p> | <p>(NOTE: Electroless plating refers to electroless plating of a metallic layer on a metallic or nonmetallic substrate.)</p> <p>Determine if the facility has existing sources that discharge less than 38,000 L (10,000 gal) per calendar day in process wastewaters resulting from the electroless plating into a POTW. (5)(15)(16)</p> <p>Verify that the source's wastewater meets the limitations listed in Table 2 of Appendix 11-1. (5)(15)(16)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>Verify that the source's wastewater TTO is limited to 4.57 mg/L maximum. (5)(15)(16)</p> |

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| <p>11-23. Facilities that have existing sources that introduce pollutants to POTWs that discharge 38,000 L (10,000 gal) or more per calendar day of pollutants in process wastewaters resulting from electroless plating are subject to certain pretreatment standards (40 CFR 413.70, 413.74(a), 413.74(c) through 413.74 (e), and 413.74(g)).</p> <p style="text-align: center;">...</p> | <p>(NOTE: Electroless plating refers to electroless plating of a metallic layer on a metallic or nonmetallic substrate.)</p> <p>Determine if the facility has existing sources that discharge 38,000 L (10,000 gal) or more per calendar day process wastewaters resulting from electroless plating into a POTW. (5)(15)(16)</p> <p>Verify that the source's wastewater meets the limitations listed in Table 3 of Appendix 11-1. (5)(15)(16)</p> <p>(NOTE: Mass-based standards are equivalent to and may be applied in place of those listed in Table 3 upon prior agreement between the facility and the POTW receiving the wastes.)</p> <p>Verify that the facility does not augment the use of process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>Verify that if there is an absence of chelating agents in the pretreatment process, that after reduction of hexavalent chromium wastes, and after neutralization using calcium oxide (or hydroxide) the limitations, listed in Table 4 of Appendix 11-1, are met. (5)(15)(16)</p> <p>Verify that the source's wastewater TTO is limited to 2.13 mg/L maximum for any 1 day. (5)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>Metal Finishing Point Sources</p> <p>11-24. Facilities that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacturing are subject to certain point source effluent limitations (40 CFR 433.10 through 433.12(c)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacturing. (5)(15)(16)</p> <p>(NOTE: If any of the listed processes are performed, then refer to Appendix 11-2 for an additional listing of process operations subject to limitations under this regulation.)</p> <p>Verify that self-monitoring of cyanide is conducted after cyanide treatment and before dilution with other streams. (5)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>11-25. Facilities that have shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacturing are subject to certain best available technology (BAT) point source effluent limitations (40 CFR 433.14).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has shops performing electroplating, electroless plating, anodizing, coating (chromating, phosphating, and coloring), chemical etching and milling, and printed circuit board manufacturing. (5)(15)(16)</p> <p>Verify that the pollutants in discharge from metal finishing point sources meet the limitations listed in Table 1 of Appendix 11-2. (5)(15)(16)</p> <p>(NOTE: Alternately, if the facility does cyanide treatment, and if permitted by the appropriate authority, the following amenable limits may apply for cyanide: maximum for any 1 day = 0.86 mg/L; maximum monthly average = 0.32 mg/L.)</p> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>Existing Metal Finishing Point Sources</p> <p>11-26. Facilities that introduce pollutants from existing metal finishing point sources into POTWs are subject to certain pretreatment standards (40 CFR 433.15).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility introduces pollutants from existing metal finishing point sources into POTWs. (5)(15)(16)</p> <p>Verify that pollutants introduced from existing metal finishing point sources (except from job shops and independent printed circuit board manufacturers) into POTWs meet the standards listed in Table 1 of Appendix 11-2. (5)(15)(16)</p> <p>(NOTE: Alternately, if the facility performs cyanide treatment, and if permitted by the appropriate authority, the following amenable limits may apply cyanide: maximum for any 1 day = 0.86 mg/L; maximum monthly average = 0.32 mg/L.)</p> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>Verify that any existing source subject to the criteria listed here meets the daily maximum pretreatment standard for TTO of 4.57 mg/L. (5)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>New Metal Finishing Point Sources</p> <p>11-27. Facilities that introduce pollutants from new metal finishing point sources into POTWs are subject to certain performance standards (40 CFR 433.16).</p> <p>...</p> <p>11-28. Facilities that introduce pollutants from new metal finishing point sources into POTWs are subject to certain pretreatment standards (40 CFR 433.17).</p> <p>...</p> | <p>Determine if the facility introduces pollutants from new metal finishing point sources into POTWs. (5)(15)(16)</p> <p>Verify that pollutants introduced from new metal finishing point sources into POTWs meet the standards listed in Table 2 of Appendix 11-2. (5)(15)(16)</p> <p>(NOTE: Alternately, if the facility performs cyanide treatment, and if permitted by the appropriate authority, the following amenable limits may apply for cyanide: maximum for any 1 day = 0.86 mg/L; maximum monthly average = 0.32 mg/L.)</p> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>...</p> <p>Determine if the facility introduces pretreated pollutants from new metal finishing point sources into POTWs. (5)(15)(16)</p> <p>Verify that the pretreated pollutants introduced from new metal finishing point sources into POTWs meet the standards listed in Table 3 of Appendix 11-2. (5)(15)(16)</p> <p>(NOTE: Alternately, if the facility performs cyanide treatment, and if permitted by the appropriate authority, the following amenable limits may apply for cyanide: maximum for any 1 day = 0.86 mg/L; maximum monthly average = 0.32 mg/L.)</p> <p>Verify that the facility does not augment the use of metal finishing process wastewater or otherwise dilute it as a partial or total substitute for adequate treatment to achieve compliance with the limitations. (5)(15)(16)</p> <p>...</p> |

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| <p>DREDGING</p> <p>11-29. If the facility conducts any dredging operations in waters of the United States or ocean waters, a permit must be obtained prior to beginning operations (33 CFR 323.3 and 324.3; ER 1130-2-406, para 6b).</p> <p>...</p> <p>11-30. Prior to conducting or issuing a permit for dredging, facilities must ascertain the effect of such projects on natural and cultural resources (33 CFR 325.1 (b)).</p> <p>...</p> <p>11-31. Federal facilities are prohibited from dredging shoreward of harborlines (ER 1130-2-307, para 5).</p> <p>...</p> | <p>Determine if the facility has obtained a permit for any dredging operations, including construction of fixed structures. (7)(10)</p> <p>Verify that the conditions of any permits are being followed. (7)(10)</p> <p>...</p> <p>Determine if the appropriate state officials were contacted and necessary steps taken to ensure protection of natural and cultural resources (see the <i>Natural Resources Management</i> and <i>Cultural and Historic Resources Management</i> sections of this manual). (7)(10)</p> <p>...</p> <p>Verify that no dredging operations have been conducted shoreward of harborlines. (7)(10)</p> <p>...</p> |

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| <p>11-32. Facilities that undertake or issue permits for the discharge or dumping of dredged material are required to solicit comments and information, by way of public notice, concerning the probable impact of such materials (33 CFR 325.3).</p> | <p>Determine if a public notice was prepared and contained the following: (10)(15)(16)</p> <ul style="list-style-type: none"> - name and location of the Federal project and proposed disposal site - citation of law(s) under which the Federal project is reviewed - brief description of project, including: <ul style="list-style-type: none"> - type, composition, and quantity of material to be discharged - time schedule for dredging activities - type of equipment to be used - method of dredging and conveyance - sketch of location (including depth of water in area) - list and location of all proposed disposal sites - brief description of use of property immediately adjacent to the disposal area - information on related dredging and disposal activities conducted by others in the area - if the disposal site(s) is one that has been previously designated by the USEPA - other Federal, state, and local agencies involved in the activity - statement concerning preliminary determination of the need for an environmental impact statement (EIS) - any other applicable information necessary for evaluating the impact of disposal of dredged material. <p>Verify that interested parties are given an adequate period of time to express their views (not less than 15 days from date of mailing). (10)(15)(16)</p> |

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| <p>11-33. Facilities are also required to ensure that certain statements are included in the public notice of a Department of the Army (DOA) permitted activity or a Federal project (33 CFR 337.1(a) (17)(vi) and 337.1(b)).</p> | <p>Verify that the following statement was included in every public notice: (10)(15)(16)</p> <ul style="list-style-type: none"> - Any person who has an interest which may be affected by the disposal of this dredged material may request a public hearing. The request must be submitted in writing to the District Engineer within the comment period of this notice and must clearly set forth the interest which may be affected and the manner in which the interest may be affected by this activity. <p>Verify that the following statement is included in the public notice if the project involves the transportation of dredged material for the purpose of dumping in ocean waters: (10)(15)(16)</p> <ul style="list-style-type: none"> - The proposed transportation of this dredged material for disposing of it in ocean waters is being evaluated to determine that the proposed disposal will not unreasonably degrade or endanger human health, welfare, or amenities or the marine environment, ecological system, or economic potentialities. In making this determination, the criteria established by the Administrator, USEPA pursuant to Section 102(a) of the Ocean Dumping Act (ODA) will be applied. In addition, based upon an evaluation of the potential effect which the failure to utilize this ocean disposal site will have on navigation, economic and industrial development, and foreign and domestic commerce of the United States, an independent determination will be made of the need to dispose of the dredged material in ocean waters, other possible methods of disposal, and other appropriate locations. |
| <p>11-34. District Engineers are responsible for publishing lists of decisions made on projects involving the disposal of dredged materials in navigable or ocean waters (33 CFR 325.2(a) (8)).</p> | <p>Verify that a list is published monthly about decisions made in the previous month and that the lists include the following information: (10)(15)(16)</p> <ul style="list-style-type: none"> - identification of project by name - brief description and location of disposal operation - decision made on project. <p>Verify that the list was distributed to all people who receive any public notices on the project and all attendees at the public meeting or hearing. (10)(15)(16)</p> |
| <p>11-35. Facilities are required to maintain certain information regarding each funded project (33 CFR 325.3(d)(3) and 325.3(d)(4)).</p> | <p>Determine if the facility keeps a file on each Federal project that includes: (10)(15)(16)</p> <ul style="list-style-type: none"> - a copy of the public notice - a list of addresses to whom notice was sent. <p>Verify that the mailing list is updated at least once every 2 yr (10)(15)(16)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>LAND APPLICATION OF SLUDGE</p> <p>General</p> <p>11-36. As of 19 February 1994, representative samples of sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator, are required to be collected and analyzed (40 CFR 503.8).</p> <p style="text-align: center;">...</p> <p>11-37. As of 19 February 1994, depending on when the last time bulk sewage sludge subject to the cumulative loading rates in Appendix 11-3 was last applied to a site (40 CFR 503).</p> | <p>(NOTE: Checklist items 11-36 through 11-83 apply only to sludge generated during the treatment of domestic sewage in a treatment works. For exclusions, see the definitions of the term <i>Excluded Sludge</i>.)</p> <p>Determine if the facility applies sewage sludge to the land, places it on a surface disposal site, or fires it in a sewage sludge incinerator. (10)(15)(16)</p> <p>Verify that the sludge is analyzed prior to application, placement, or firing for the following: (10)(15)(16)</p> <ul style="list-style-type: none"> - enteric viruses - fecal coliforms - helminth ova - inorganic pollutants - salmonella bacteria - specific oxygen uptake rate - total, fixed, and volatile solids. <p style="text-align: center;">...</p> <p>Verify that personnel contacted the permitting authority in the State to determine if bulk sewage sludge which has to meet the standards in Appendix 11-3 has been applied to the site since 20 July 1993. (7)(10)(15)(16)</p> <p>(NOTE: If sludge subject to these standards has not been applied to the site since 20 July 1993, the cumulative amount for each pollutant in Appendix 11-3 may be applied.)</p> <p>Verify that if bulk sewage sludge subject to these standards has been applied since 20 July 1993 and the cumulative amount of each pollutant applied to the site is known, the known cumulative amount is used to determine the additional amount of each pollutant that can be applied. (7)(10)(15)(16)</p> <p>(NOTE: If the cumulative amount is not known, there shall be no further application to the site.)</p> <p style="text-align: center;">...</p> |

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| <p>11-38. As of 19 February 1994, bulk sewage sludge or sewage sludge sold or given away in a bag or other container must meet specific standards (40 CFR 503.13(a)(1), 503.13(a)(4), and 503.14(e)).</p> | <p>Verify that if the facility gives or sells bulk sewage sludge or sewage sludge in a bag or other container, it meets the pollutant concentration limits in Appendix 11-4. (7)(10)(15)(16)</p> <p>Verify that if the facility gives or sells bulk sewage sludge in a bag or other container it meets one of the following: (7)(10)(15)(16)</p> <ul style="list-style-type: none"> - pollutant concentrations do not exceed Appendix 11-5 - the product of the concentration of each pollutant in the sewage sludge and the annual whole sludge application rate for the sewage sludge does not cause the annual pollutant loading rates in Appendix 11-6 to be exceeded. <p>Verify that a label is affixed to the bag or container or an information sheet provided to the person who receives the sewage sludge. (7)(10)(15)(16)</p> <p>Verify that the label or information sheet states: (7)(10)(15)(16)</p> <ul style="list-style-type: none"> - the name and address of the person who prepared the sewage sludge - a statement that the application to land is prohibited except in accordance with the instructions on the label or information sheet - the annual whole sludge application rate for the sewage sludge that does not cause any exceedance of the annual pollutant loading rates in Appendix 11-6. <p>(NOTE: When sewage sludge or material derived from sewage sludge is sold or given away in a bag or other container and meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the labeling requirements (40 CFR 503.10(e) and 503.10(f)):</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved |

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| <p>11-38. (continued)</p> | <ul style="list-style-type: none"> - the specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. |
| <p>11-39. As of 19 February 1994, the application of bulk sewage sludge is not permitted in specific circumstances (40 CFR 503.14(a) through 503.14 (c)).</p> | <p>Verify that bulk sewage sludge is not applied to the land if it is likely to adversely threaten an endangered species or its designated critical habitat. (10)(15)(16)</p> <p>Verify that bulk sewage sludge is not applied to agricultural land, forest, a public contact site, or reclamation site that is flooded, frozen, or snow covered so that the bulk sewage sludge enters a wetland or other waters of the United States. (10)(15)(16)</p> <p>Verify that bulk sewage sludge is not applied to agricultural land, forest, or a reclamation site that is 10 m [32.81 ft] or less from waters of the United States unless allowed by the permitting authority. (10)(15)(16)</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements (40 CFR 503.10(b) and 503.10(c)):</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved |

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| <p>11-39. (continued)</p> | <ul style="list-style-type: none"> - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. |

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| <p>11-40. As of 19 February 1994, bulk sewage sludge applied to agricultural land, forest, a public contact site, or a reclamation site must meet specific standards (40 CFR 503.12(b), 503.13 (a)(2), and 503.14(d)).</p> | <p>Verify that the cumulative loading rate for each pollutant does not exceed the limits outlined in Appendix 11-3. (10)(15)(16)</p> <p>Verify that the concentration of each pollutant in the sewerage sludge does not exceed the concentration for the pollutant in Appendix 11-5. (10)(15)(16)</p> <p>Verify that bulk sewage sludge is applied at a whole sludge application rate that is equal to or less than the agronomic rate for the bulk sewage sludge unless otherwise specified by a permitting authority. (10)(15)(16)</p> <p>(NOTE: When bulk sewage sludge is applied to the land that meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from the requirements concerning Appendix 11-3 and the agronomic rate application:</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 - 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.) |

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| <p>11-41. As of 19 February 1994, bulk sewage sludge applied to a lawn or home garden must not contain pollutants in excess of the limits in Appendix 11-5 (40 CFR 503.13(a)(3)).</p> | <p>Verify that if bulk sewage sludge is applied to a lawn or home garden, it does not contain pollutants in excess of the limits in Appendix 11-5. (10)(15)(16)</p> |
| <p>11-42. As of 19 February 1994, the annual application rate for domestic septage applied to agricultural land, forest, or a reclamation site must not exceed specific limits (40 CFR 503.12(c) and 503.13(c)).</p> | <p>Verify that the annual application rate for domestic septage applied to agricultural lands, forest, or a reclamation site do not exceed the annual application rate (AAR) calculated using the following equation. (10)(15)(16)</p> $AAR = \frac{N}{0.0026}$ <p>AAR = Annual application rate in gallons per acre per 365-day period</p> <p>N = amount of nitrogen in pounds per acre per 365-day period needed by the crop or vegetation grown on the land.</p> |

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| <p>Vectors and Pathogens</p> <p>11-43. As of 19 February 1994, bulk sewage sludge applied to agricultural land, forest, a public contact site, or a reclamation site is required to meet specific standards for pathogens (40 CFR 503.15(a)(1), 503.32(a), and 503.32(b)).</p> | <p>Verify that the sewage sludge meets the Class A or the Class B pathogen requirements (see Definitions) and the following site restrictions: (7)(10)(15)(16)</p> <ul style="list-style-type: none"> - food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge - food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil - food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil - food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge - animals are not allowed to graze for 30 days after application - turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority - public access to land with a high potential for public exposure is restricted for 1 yr after application - public access to land with a low potential for public exposure is restricted for 30 days after application. |

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| <p>11-44. As of 19 February 1994, bulk sewage sludge applied to agricultural land, forest, a public contact site or a reclamation site is required to meet specific standards for vector attraction reduction (40 CFR 503.15 (c)(1) and 503.33(b)(1) through 503.33(b)(10)).</p> | <p>Verify that one of the following vector reduction requirements are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 - 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and than at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials - sewage sludge is injected below the surface of the land: <ul style="list-style-type: none"> - no significant amount of the sewage sludge is present on the land surface within 1 h after injection - when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process - sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process. |

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| <p>11-45. As of 19 February 1994, bulk sewage sludge applied to a lawn or home garden must meet the Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(2), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).</p> | <p>Verify that for bulk sewage sludge, the Class A pathogen requirements (see Definitions) are met. (10)(15)(16)</p> <p>Verify that one of the following vector reduction requirements are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. |

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| <p>11-46. As of 19 February 1994, sewage sludge that is sold or given away in a bag or container must meet Class A pathogen requirements and specific vector reduction requirements (40 CFR 503.15(a)(3), 503.32(a), and 503.33(b)(1) through 503.33(b)(8)).</p> | <p>Verify that sewage sludge which is sold or given away in a bag or container meets the Class A pathogen requirements (see <i>Key Compliance Definitions</i>). (10)(15)(16)</p> <p>Verify that one of the following vector reduction requirements are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent - a 17 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an anaerobically digested sewage sludge and the vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F] - a 15 percent reduction of volatile solids when the 38 percent volatile solids reduction requirements cannot be met for an aerobically digested sewage sludge and the vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has percent solids of two percent or less aerobically in the laboratory in a bench-scale unit for 30 additional days at 20 °C [68 °F] - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer and the temperature is higher than 40 °C [104 °F] and the average temperature of the sewage sludge is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for two h and then at 11.5 or higher for an additional 22 h - the percent solids of sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. |

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| <p>11-47. As of 19 February 1994, domestic septage that is applied to agricultural land, forest, or a reclamation site must meet specific pathogen requirements and vector reduction requirements (40 CFR 503.15(b), 503.15(d), 503.32(c)(1), 503.32(c)(2), 503.33(b)(9), 503.33(b)(10), and 503.33(b)(12)).</p> | <p>Verify that one of the following requirements is met for pathogen control: (10)(15)(16)</p> <ul style="list-style-type: none"> - the pH of the domestic septage is raised to 12 or higher by alkali addition remaining 12 or higher for 30 min. and the following land restrictions are met: <ul style="list-style-type: none"> - food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge - food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil - food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil - food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge - site restrictions are followed: <ul style="list-style-type: none"> - food crops with harvested parts that touch the sewage sludge soil mixture and are totally above the land surface are not harvested for 14 mo after application of sewage sludge - food crops with harvested parts below the surface of the land are not harvested for 20 mo after the application of sewage sludge when the sewage sludge remains on the land surface for 4 mo or longer prior to incorporation into the soil - food crops with harvested parts below the surface of the land are not harvested for 38 mo after application of sewage sludge when the sewage sludge remains on the land surface for less than 4 mo prior to incorporation into the soil - food crops, feed crops, and fiber crops are not harvested for 30 days after application of the sewage sludge - animals are not allowed to graze for 30 days after application - turf grown on land where sewage sludge is applied is not harvested for 1 yr after application of sewage sludge when the turf is placed on either land with a high potential for public exposure or a lawn, unless otherwise specified by the permitting authority - public access to land with a high potential for public exposure is restricted for 1 yr after application - public access to land with a low potential for public exposure is restricted for 30 days after application. |

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| 11-47. (continued) | <p>Verify that one of the following vector attraction reduction requirements is met: (10)(15)(16)</p> <ul style="list-style-type: none"> - sewage sludge is injected below the surface of the land: <ul style="list-style-type: none"> - no significant amount of the sewage sludge is present on the land surface within 1 h after injection - when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process - sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process - the pH of domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min. |

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| <p>Notifications</p> <p>11-48. As of 19 February 1994, persons who prepare bulk sewage sludge are required to provide specific notifications (40 CFR 503.12 (f) and 503.12(g)).</p> | <p>Verify that if the facility prepares bulk sewage sludge, it provides the person applying the bulk sewage sludge with the notices and information needed to comply with the land application regulations. (10)(15)(16)</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements (40 CFR 503.10(b)):</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.) |

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| <p>11-49. As of 19 February 1994, persons who prepare bulk sewage sludge that is applied to agricultural land, forest, a public contact site, or a reclamation site are required to provide users written notification of the total nitrogen on a dry weight basis (40 CFR 503.12(d)).</p> | <p>Determine if the facility prepares sewage sludge for application to agricultural land, forest, a public contact site, or a reclamation site. (10)(15)(16)</p> <p>Verify that the facility provides users with written notification of the total nitrogen on a dry weight basis. (10)(15)(16)</p> |
| <p>11-50. As of 19 February 1994, persons who apply bulk sewage sludge to the land are required to provide notice to the land owner or lease holder (40 CFR 503.12(h)).</p> | <p>Verify that notice is given that includes the information needed to verify compliance with the land application regulations. (10)(15)(16)</p> <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements (40 CFR 503.10(b) and 503.10(c)):</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] |

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| <p>11-50. (continued)</p> <p>...</p> <p>11-51. As of 19 February 1994, facilities that prepare bulk sewage sludge which is used in a different state are required to provide written notice (40 CFR 503.12(i)).</p> <p>...</p> | <ul style="list-style-type: none"> - sewage sludge is treated in an aerobic process for 11 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.) <p>...</p> <p>Determine if the facility prepares sewage sludge that is used for land application in another state. (10)(15)(16)</p> <p>Verify that written notification is prepared and provided to the permitting authority in the state of application that includes the following: (10)(15)(16)</p> <ul style="list-style-type: none"> - location of each land application site - approximate time period bulk sewage sludge will be applied to the site - name, address, telephone number, and NPDES permit number (if appropriate) for the facility preparing the sludge - name, address, telephone number, and NPDES permit number (if appropriate) for the facility applying the sludge. <p>...</p> |

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| <p>11-52. As of 19 February 1994, facilities that apply bulk sewage sludge subject to the cumulative loading rates in Appendix 11-3 are required to provide written notice prior to the initial application of the sludge (40 CFR 503.12(j)).</p> | <p>Verify that, prior to the initial application of bulk sewage sludge which is subject to the cumulative loading rates in Appendix 11-3, notice is provided to the permitting authority for the state that includes: (10)(15)(16)</p> <ul style="list-style-type: none"> - the location of the land application site - the name, address, telephone number, and NPDES permit number (if appropriate) of the facility applying the sludge. <p>(NOTE: When bulk sewage sludge or bulk material derived from sewage sludge is applied to the land that meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions), and vector attraction reduction requirements as follows, it is exempt from these requirements (40 CFR 503.10(b) and 503.10(c)):</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials.) |

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| <p>Monitoring</p> <p>11-53. Monitoring for the limitations in Appendices 11-3 through 11-6, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements must be done according to the frequency in Appendix 11-7 (40 CFR 503.16(a)).</p> <p style="text-align: center;">...</p> <p>11-54. In specific instances, when domestic sewage is applied to agricultural land, forest, or a reclamation site, each container of domestic septage applied to the land is required to be monitored for compliance (40 CFR 503.16(b)).</p> <p style="text-align: center;">...</p> | <p>Verify that monitoring for the limitations in Appendices 11-3 through 11-6, pathogen density in Class A and Class B pathogens, and vector attraction reduction requirements is done according to the frequency in Appendix 11-7. (10)(15)(16)</p> <p>(NOTE: After the sewage sludge has been monitored for 2 yr, the permitting authority may reduce the frequency of monitoring.)</p> <p style="text-align: center;">...</p> <p>Verify that each container of domestic septage is monitored if the pH has been raised to 12 or higher by alkali addition and kept there for 30 min. (10)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>Recordkeeping and Reporting</p> <p>11-55. When bulk sewage sludge is applied to the land or sold in a bag or container and it meets the requirements in Appendix 11-5, Class A pathogen requirements, and vector attraction reduction requirements, specific recordkeeping requirements must be met (40 CFR 503.17(a)(1)).</p> | <p>Determine if the facility applies bulk sewage sludge or sells or gives it away in a bag or container. (10)(15)(16)</p> <p>Verify that it meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements: (10)(15)(16)</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. <p>Verify that the following information is retained for 5 yr: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-5 - a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met - a description of how the Class A pathogen requirements are being met - a description of how the vector attraction reduction is being met |

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| <p>11-56. When the facility derives material from sewage sludge for application and/or to sell or give away in a bag or container, and it meets the requirements in Appendix 11-5, Class A pathogen requirements, and vector attraction reduction requirements, specific recordkeeping requirements must be met (40 CFR 503.17(a)(2)).</p> | <p>Determine if the facility derives material from bulk sewage sludge or sells or gives away material derived from sewage sludge in a bag or container. (10)(15)(16)</p> <p>Verify that it meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions) and one of the following vec or attraction reduction requirements: (10)(15)(16)</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 hours and than at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. <p>Verify that the following information is retained for 5 yr: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-5 - a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met - a description of how the Class A pathogen requirements are being met - a description of how the vector attraction reduction is being met. |

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| <p>11-57. When bulk sewage sludge that meets the limitations in Appendix 11-5, the requirements concerning Class A pathogens, and the vector attraction reduction requirements and is applied to agricultural land, forest, a public contact site, or reclamation site, specific reporting requirements must be met (40 CFR 503.17(a)(3)).</p> | <p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site, or reclamation site. (10)(15)(16)</p> <p>Verify that it meets the requirements in Appendix 11-5, Class A pathogen requirements (see definitions) and one of the following vector attraction reduction requirements: (10)(15)(16)</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials. |

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| 11-57. (continued) | <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-5 - a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met - a description of how the Class A pathogen requirements are being met - a description of how the vector attraction reduction is being met. <p>Verify that the following information is retained for 5 yr by the person who applies the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - a statement certifying that appropriate mangement practices and application procedures are being used - a description of how required management practices are implemented - a description of how the vector reduction requirements are met. |
| <p>11-58. When bulk sewage sludge that meets the limitations in Appendix 11-5, and the requirements concerning Class B pathogens, and is applied to agricultural land, forest, a public contact site, or reclamation site, specific reporting requirements must be met (40 CFR 503.17(a)(4)).</p> | <p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site, or reclamation site. (10)(15)(16)</p> <p>Verify that it meets the requirements in Appendix 11-5 and Class B pathogen requirements (see definitions). (10)(15)(16)</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-5 - a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met - a description of how the Class B pathogen requirements are being met - a description of how the vector attraction reduction is being met when it is used. <p>Verify that the following information is retained for 5 yr by the person who applies the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - a statement certifying that appropriate mangement practices and application procedures are being used - a description of how required management practices are implemented - a description of how site restrictions are being met - a description of how the vector reduction requirements are met when they are used. |

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| <p>11-59. When bulk sewage sludge that meets the limitations in Appendix 11-3, is applied to agricultural land, forest, a public contact site, or a reclamation site, specific reporting requirements must be met (40 CFR 503.17(a)(5)).</p> | <p>Determine if the facility applies bulk sewage sludge to agricultural land, forest, a public contact site, or a reclamation site. (10)(15)(16)</p> <p>Verify that it meets the requirements in Appendix 11-3. (10)(15)(16)</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-3 - a statement certifying which for of vector attraction reduction is being used and that pathogen requirements are being met - a description of how the pathogen requirements are being met - a description of how the vector attraction reduction is being met when used. <p>Verify that the following information is retained indefinitely by the person who applies the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-3 - the number of hectares in each site upon which bulk sewage sludge is applied - the date and time bulk sewage sludge is applied to each sites - the cumulative amount of each pollutant from Appendix 11-3 in the bulk sewage sludge applied to each site - amount applied to each site - a certification statement indicating that required information for each site has been obtained - a description of how the requirements to obtain information were met. <p>Verify that the following information is retained for 5 yr by the person applying the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - a statement certifying that appropriate mangement practices and application procedures are being used - a description of how required management practices are implemented - a certification statement that Class B pathogen requirements are being met - a description of how site restrictions are being met - certification statement that vector reduction requirements are met - a description of how vector reduction requirements are being met. |

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| <p>11-60. When bulk sewage sludge is given away or sold in a bag or container, and it meets the requirements in Appendix 11-6, specific recordkeeping requirements must be met (40 CFR 503.17 (a)(6)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility sells or gives away bulk sewage sludge in a bag or container. (10)(15)(16)</p> <p>Verify that it meets the requirements in Appendix 11-6. (10)(15)(16)</p> <p>Verify that the following information is retained for 5 yr by the person who prepares the sludge: (10)(15)(16)</p> <ul style="list-style-type: none"> - the annual whole sludge application rate for the sewage sludge that does not cause the annual pollutant rates in Appendix 11-6 to be exceeded - the concentration of each pollutant listed in Appendix 11-6 - a statement certifying which vector attraction reduction is being used and that Class A pathogen requirements are being met - a description of how the Class A pathogen requirements are being met - a description of how the vector attraction reduction is being met. <p style="text-align: center;">...</p> |
| <p>11-61. When domestic septage is applied to agricultural land, forest, or a reclamation site, specific reporting requirements must be met (40 CFR 503.17(b)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility applies domestic septage to agricultural land, forest, a public contact site, or reclamation site. (10)(15)(16)</p> <p>Verify that the following information is retained for 5 yr by the person who applies the domestic septage: (10)(15)(16)</p> <ul style="list-style-type: none"> - the location of each site on which domestic septage is applied - the number of acres in each site on which domestic septage is applied - the date and time of application at each site - the nitrogen requirements for the crop or vegetation grown on each site during a 365-day period - the rate in gal/acre per 365-day period at which domestic septage is applied to each site - a statement certifying which vector attraction reduction is being used and that pathogen requirements are being met - a description of how the Class A pathogen requirements are being met - a description of how the pathogen requirements are being met - a description of how the vector attraction reduction is being met. <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>11-62. Class I sludge management facilities. POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day] and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.18).</p> | <p>Verify that the following information is submitted to the permitting authority by 19 February of each year: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-5 - a statement certifying which for of vector attraction reduction is being used and that Class A pathogen requirements are being met - a description of how the Class A pathogen requirements are being met - a description of how the vector attraction reduction is being met. <p>Verify that the following information is submitted on 19 Feb of each year when 90 percent or more of any of the cumulative loading rates in Appendix 11-3 is met: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of each pollutant listed in Appendix 11-3 - the number of hectares in each site upon which bulk sewage sludge is applied - the date and time bulk sewage sludge is applied to each sites - the cumulative amount of each pollutant from Appendix 11-3 in the bulk sewage sludge applied to each site - amount applied to each site - a certification statement indicating that required information for each site has been obtained - a description of how the requirement to obtain information were met. |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>SURFACE DISPOSAL OF SLUDGE</p> <p>General</p> <p>11-63. As of 19 February 1994, an active sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time, is located in an unstable area, or located in a wetland, is required to close by 19 February 1994 (40 CFR 503.22(b)).</p> <p>...</p> <p>11-64. As of 19 February, 1994, the facility is required to submit a written closure and post-closure plan that meets specific requirements to the permitting authority 180 days prior to the date of closure (40 CFR 503.22(c)).</p> <p>...</p> <p>11-65. As of 19 February 1994, active sewage sludge units without a liner and leachate collection system are required to meet specific standards (40 CFR 503.23(a)(1) and 503.23(b)).</p> <p>...</p> | <p>(NOTE: The requirements concerning surface disposal of sludge do not apply to sewage sludge stored on the land or to the land on which sewage sludge is stored. It also does not apply to sewage sludge that remains on the land for longer than 2 yr when the facility who prepares the sewage sludge demonstrates that the land on which the sewage sludge remains is not an active sewage sludge unit. It also does not apply to sewage treated on the land or to the land on which the sewage sludge is treated (40 CFR 503.20(b) and 503.20(c)).)</p> <p>Determine if the facility has a sewage sludge unit that is located within 60 m [196.85 ft] of a fault that has displacement in Holocene time, is located in an unstable area, or is located in a wetland. (10)(15)(16)</p> <p>Verify that the unit will be closed by 19 February 1994, unless otherwise stipulated by the permitting authority. (10)(15)(16)</p> <p>...</p> <p>Determine if the facility is planning on closing an active sewage sludge unit or has recently closed a sewage sludge unit. (10)(15)(16)</p> <p>Verify that the closure and postclosure plan was submitted to the permitting authority at least 180 days in advance of closure and the plan contained the following: (10)(15)(16)</p> <ul style="list-style-type: none"> - a discussion of how the leachate collection system will be operated and maintained for 3 yr after closure if the unit has a liner and leachate collection system - a description of the system used to monitor for methane gas in the air in any structure within the surface disposal site and in the air at the property line - a discussion of how public access will be restricted for 3 yr after closure. <p>Verify that if there are plans to turn the surface disposal site over to another owner, the facility notifies the subsequent owner that sewage sludge was placed on the land. (10)(15)(16)</p> <p>...</p> <p>Verify that following concentrations are not exceeded in sewage sludge placed on an active sewage sludge unit: (10)(15)(16)</p> <ul style="list-style-type: none"> - arsenic: 73 mg/kg - chromium: 600 mg/kg - nickel: 420 mg/kg. <p>(NOTE: Amounts are based on a dry weight basis.)</p> <p>...</p> |

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**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>11-66. As of 19 February 1994, active sewage sludge units without a liner and leachate collection system with a boundary less than 150 m [492.13 ft] from the property line of the surface disposal site are required to meet specific requirements (40 CFR 503.23 (a)(2) and 503.23(b)).</p> <p style="text-align: center;">...</p> | <p>Verify that the concentrations of each pollutant listed in Appendix 11-8 are not exceeded in relation to the listed distances. (10)(15)(16)</p> <p>(NOTE: At the time of the permit application, the owner/operator of the site may ask for site-specific pollutant limits.)</p> |
| <p>11-67. As of 19 February 1994, sewage sludge units are required to be operated according to specific operation and management standards (40 CFR 503.24).</p> | <p>Verify that sewage sludge is not placed in an active sewage sludge unit if it is likely to adversely affect a threatened or endangered species or its critical habitat. (10)(15)(16)</p> <p>Verify that active sewage sludge units: (10)(15)(16)</p> <ul style="list-style-type: none"> - do not restrict the flow of a base flood - are located 60 m [196.85 ft] or more from a fault that has displacement in Holocene time, unless otherwise specified by the permitting authority - are not located in an unstable area - will not contaminate an aquifer - are not located in a wetland unless by permit. <p>(NOTE: The results of a groundwater monitoring program developed by a qualified groundwater scientist, or a certification by a qualified groundwater scientist, will be used to demonstrate that sewage sludge placed on an active sewage sludge unit does not contaminate an aquifer.)</p> <p>Verify that when a surface disposal site is located in a seismic impact zone, the unit is designed to withstand the maximum recorded horizontal ground level acceleration. (10)(15)(16)</p> <p>Verify that for runoff the following occurs: (10)(15)(16)</p> <ul style="list-style-type: none"> - the runoff is collected and disposed of in accordance with an NPDES permit - the runoff collection system has the capacity to handle runoff from a 24-h, 25-yr storm event. <p>Verify that leachate is handled so that: (10)(15)(16)</p> <ul style="list-style-type: none"> - the leachate collection system for an active sewage sludge unit that has a liner and leachate collection system is operated and maintained during the period the sewage sludge unit is active, and for 3 yr thereafter - leachate from an active sewage sludge unit that has a liner and a leachate collection system is collected and disposed of in accordance with the applicable requirements from when the unit is active, and for 3 yr thereafter. |

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| COMPLIANCE CATEGORY: WASTEWATER MANAGEMENT USACE ERGO | |
|---|--|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| 11-67. (continued) | <p>Verify that the following occurs when a cover is placed on a sewage sludge unit: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of methane gas in the air in any structure within the surface disposal site of an active unit does not exceed 25 percent of the lower explosive limit for methane gas during the period that the unit is active and the concentration of the methane gas in air at the property line of the surface disposal site do not exceed the lower explosive limit for methane gas during the period that the sewage sludge unit is active - the concentration of methane gas at closure when the final cover is placed in air in any structure within any structure within the surface disposal site shall not exceed 25 percent of the lower explosive limit for methane gas for 3 yr after the unit closes and the concentration of methane gas in air at the property line of the unit does not exceed the lower explosive limit for methane gas 3 yr after closure unless otherwise specified by the permitting authority. <p>Verify that a food or feed crop or a fiber crop are not grown on an active sewage sludge unit unless it has been demonstrated to the permitting authority that, through management practices, public health and the environment are protected from any reasonably anticipated adverse effects. (10)(15)(16)</p> <p>Verify that animals are not grazed on an active sewage sludge unit unless it has been demonstrated to the permitting authority that, through management practices, public health and the environment are protected from any reasonably anticipated adverse effects. (10)(15)(16)</p> <p>Verify that public access is restricted for the period during which the surface disposal site contains an active unit and for 3 yr after the last active sewage sludge unit in the surface disposal site closes. (10)(15)(16)</p> |
| 11-68. As of 19 February 1994, Class A or one of the Class B pathogen requirements (see definitions) must be met when placing sewage sludge on an active sewage sludge unit, unless it is covered with soil or other material at the end of each operating day (40 CFR 503.25(a)). | <p>Determine if the sewage sludge meets Class A or one of the Class B pathogen requirements. (10)(15)(16)</p> <p>Verify that if the sludge does not meet pathogen requirements, it is covered with soil or other material at the end of each operating day. (10)(15)(16)</p> |

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**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>11-69. As of 19 February 1994, vector attraction reduction must be done when sewage sludge or domestic septage is placed on an active sewage sludge unit (40 CFR 503.25(b) and 503.25(c)).</p> | <p>Verify that when sewage sludge is placed on an active sewage sludge unit one of the following vector attraction reduction requirements is done: (10)(15)(16)</p> <ul style="list-style-type: none"> - the mass of volatile solids in the sewage sludge is reduced by a minimum of 38 percent. If this cannot be done: <ul style="list-style-type: none"> - for an anaerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge anaerobically in the laboratory in a bench-scale unit for 40 additional days at a temperature between 30 and 37 °C [86 and 98.6 °F]. When at the end of 40 days, the volatile solids in the sewage sludge at the beginning of that period is reduced by less than 17 percent, vector attraction reduction is achieved - for an aerobically digested sewage sludge, vector attraction reduction is demonstrated by digesting a portion of the previously digested sewage sludge that has a percent solids of 2 percent or less aerobically in the laboratory in a bench scale unit for 30 additional days at 20 °C [68 °F]. When at the end of the 30 days, the volatile solids in the sewage sludge at the beginning of the period is reduced by less than 15 percent, vector attraction reduction is achieved - the SOUR for sewage sludge treated in an aerobic process is equal to or less than 1.5 mg of oxygen/h/g of total solids (dry weight basis) at a temperature of 20 °C [68 °F] - sewage sludge is treated in an aerobic process for 14 days or longer, during which time the temperature of the sewage sludge is higher than 40 °C [104 °F] and the average temperature is higher than 45 °C [113 °F] - the pH of the sewage sludge is raised to 12 or higher by alkali addition, and without the addition of more alkali, remains at 12 or higher for 2 h and then at 11.5 or higher for an additional 22 h - the percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process is equal to or greater than 75 based on the moisture content and total solids prior to mixing with other materials - the percent solids of sewage sludge that contains unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 90 percent based on the moisture content and total solids prior to mixing with other materials |

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**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>11-69. (continued)</p> <p>...</p> | <ul style="list-style-type: none"> - sewage sludge is injected below the surface of the land: <ul style="list-style-type: none"> - no significant amount of the sewage sludge is present on the land surface within one hour after injection - when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process - sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process - the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day. <p>Verify that when domestic septage is placed on an active sewage sludge unit, one of the following vector attraction reduction requirements is done: (10)(15)(16)</p> <ul style="list-style-type: none"> - sewage sludge is injected below the surface of the land: <ul style="list-style-type: none"> - no significant amount of the sewage sludge is present on the land surface within one hour after injection - when the sludge that is injected in Class A with respect to pathogens, the sludge is injected below the land surface within 8 h after being discharged from the pathogen treatment process - sewage sludge applied to a land surface or placed on a surface disposal site is incorporated into the soil within 6 h after application to or placement on the land. When sludge incorporated into the soil is Class A, the sewage sludge is applied to or placed on the land within 8 h after being discharged from the pathogen treatment process - the sewage sludge placed on an active sewage sludge unit is covered with soil or other material at the end of each operating day - the pH of the domestic septage is raised to 12 or higher by alkali addition and, without the addition of more alkali, remains at 12 or higher for 30 min. <p>...</p> |

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**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>Monitoring and Documentation</p> <p>11-70. Monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit must be done according to the frequency in Appendix 11-7 (40 CFR 503.26(a)).</p> <p style="text-align: center;">...</p> <p>11-71. If, when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition, and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage must be monitored (40 CFR 503.26(b)).</p> <p style="text-align: center;">...</p> <p>11-72. In specific circumstances, air in structures within a surface disposal site and at property lines of the surface disposal site, is required to be monitored continuously for methane gas (40 CFR 503.26(c)).</p> <p style="text-align: center;">...</p> | <p>Verify that monitoring for pollutants, pathogens, and vector attraction reduction requirements for sewage sludge placed on an active sewage sludge unit is done according to the frequency in Appendix 11-7. (10)(15)(16)</p> <p>(NOTE: The permitting authority may reduce the frequency of monitoring.)</p> <p style="text-align: center;">...</p> <p>Verify that when domestic septage is placed on an active sewage sludge unit, the pH of the septage is raised to 12 or higher by alkali addition, and remains at 12 or higher without alkali addition for 30 min, each container of domestic septage is monitored. (10)(15)(16)</p> <p style="text-align: center;">...</p> <p>Verify that continuous monitoring occurs during the period which the surface disposal site contains an active sewage sludge unit on which the sewage sludge is covered and for 3 yr after a unit closes when a final cover is placed on the sewage sludge. (10)(15)(16)</p> <p style="text-align: center;">...</p> |

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**COMPLIANCE CATEGORY:
WASTEWATER MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>11-73. Specific record-keeping requirements must be met when sewage sludge, other than domestic septage, is placed on an active sewage sludge unit (40 CFR 503.27(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that the person who prepares sewage sludge retains the following information for 5 yr: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of arsenic, chromium, and nickel in the sludge - a statement certifying that pathogen and vector attraction reduction requirements are being met - a description of how the pathogen requirements are being met when done - a description of how the vector attraction reduction requirements are being met when done. <p>Verify that the operator of the surface disposal site retains the following for 5 yr: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentrations of the pollutants listed in Appendix 11-8 - a statement certifying that management practices and vector attraction reduction requirement are being met - a description of how the management practices are being met - a description of how the vector attraction reduction requirements are being met when they are done. |
| <p>11-74. Specific record-keeping requirements must be met when domestic septage is placed on an active sewage sludge unit (40 CFR 503.27(b)).</p> <p style="text-align: center;">...</p> | <p>Verify that the person who applies domestic septage with a pH of greater than 12 retains the following information for 5 yr: (10)(15)(16)</p> <ul style="list-style-type: none"> - a statement certifying that vector attraction reduction requirements are being met - a description of how the vector attraction reduction requirements are being met when done. <p>Verify that the operator of the surface disposal site retains the following for 5 yr: (10)(15)(16)</p> <ul style="list-style-type: none"> - a statement certifying that management practices and vector attraction reduction requirement are being met - a description of how the management practices are being met - a description of how the vector attraction reduction requirements are being met when they are done. |
| <p>11-75. Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day] and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority on 19 February of each year (40 CFR 503.28).</p> | <p>Verify that the following information is submitted to the permitting authority on 19 February of each year: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of arsenic, chromium, and nickel in the sludge - a statement certifying that management practices and pathogen and vector attraction reduction requirements are being met - a description of how the pathogen requirements are being met when done - a description of how the vector attraction reduction requirements are being met when done - the concentrations of the pollutants listed in Appendix 11-8 - a description of how the management practices are being met. |

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**COMPLIANCE CATEGORY:
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USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>SLUDGE INCINERATION</p> <p>11-76. As of 19 February 1994, facilities with incinerators that fire sewage sludge must meet specific emissions standards (40 CFR 503.43(a) and 503.43(b)).</p> <p style="text-align: center;">...</p> <p>11-77. As of 19 February 1994, sewage sludge being fed to an incinerator is required to meet specific concentration limitations for lead, arsenic, cadmium, and nickel (40 CFR 503.43(c) and 503.43(d)).</p> <p style="text-align: center;">...</p> <p>11-78. As of 19 February 1994, the concentration of total hydrocarbons in the exit gas from a sewage sludge incinerator must meet specific limits (40 CFR 503.44).</p> <p style="text-align: center;">...</p> <p>11-79. Sewage sludge incinerators are required to have continuous monitoring devices for hydrocarbons and oxygen in the exit gas, and a continuous monitoring for combustion temperature, as specified by the permitting authority (40 CFR 503.45(a) through 503.45(f)).</p> <p style="text-align: center;">...</p> | <p>Verify that incinerators which fire sewage sludge meet the requirements on beryllium and mercury emissions outlined in 40 CFR 61.30 through 61.34 and 61.50 through 61.56. (10)(15)(16)</p> <p style="text-align: center;">...</p> <p>Verify that the daily concentration of lead in sewage sludge fed to a sewage sludge incinerator does not exceed the concentration calculated using Formula 1 in Appendix 11-9. (10)(15)(16)</p> <p>Verify that the daily concentration of arsenic, cadmium, chromium, and nickel do not exceed the concentrations calculated using Formula 2 in Appendix 11-9. (10)(15)(16)</p> <p style="text-align: center;">...</p> <p>Verify that the monthly average concentration for total hydrocarbons in the exit gas, corrected to 0 percent moisture using the correction factor from Formula 1 of Appendix 11-10 and to 7 percent oxygen using the the correction factor from Formula 2, does not exceed 100 ppm on a volumetric basis. (10)(15)(16)</p> <p style="text-align: center;">...</p> <p>Determine what the permitting authority has specified in terms of continuous monitors for combustion temperature, and for hydrocarbons and oxygen in the exit gas. (10)(15)(16)</p> <p>Verify that the required monitors are in place and operational. (10)(15)(16)</p> <p>(NOTE: The requirement for continuous monitors for hydrocarbons is effective 19 February 1994, unless construction of new pollution control facilities is required, in which case the compliance date is 19 February 1995.)</p> <p style="text-align: center;">...</p> |

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**COMPLIANCE CATEGORY:
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USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>11-80. As of 19 February 1994, sewage sludge must not be fired in a sewage sludge incinerator if it is likely to affect a threatened or endangered species (40 CFR 503.45 (g)).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has any endangered or threatened species which might be affected by the firing of the incinerator. (10)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>11-81. Monitoring for arsenic, chromium, lead, and nickel shall be done at the frequency outlined in Appendix 11-9 (40 CFR 503.46).</p> <p style="text-align: center;">...</p> | <p>Verify that monitoring is done at the frequency outlined in Appendix 11-9. (10)(15)(16)</p> <p>(NOTE: After 2 yr of monitoring, the permitting authority might reduce the required frequency.)</p> <p>(NOTE: Beryllium, mercury, and air pollution control device operating parameters will be monitored at the frequency designated by the permitting authority.)</p> <p style="text-align: center;">...</p> |
| <p>11-82. Individuals who fire sewage sludge in an incinerator are required to keep specific information on file for 5 yr (40 CFR 503.47).</p> <p style="text-align: center;">...</p> | <p>Verify that the following information is kept on file for 5 yr: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator - the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack - information that indicates the National Emissions Standards for beryllium and mercury are met - the combustion temperatures, including the maximum combustion temperature for the incinerator - values for the air pollution control device operating parameters - the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack - the sewage sludge feed rate - the stack height for the incinerator - the dispersion factor for the site where the incinerator is located - the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator - the risk specific concentrations for chromium - a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature. <p style="text-align: center;">...</p> |

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USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>11-83. Class I sludge management facilities, POTWs with a design flow rate equal to or greater than 1 million gal/day [3,785,412 L/day], and POTWs that serve 10,000 people or more are required to submit specific information to the permitting authority (40 CFR 503.46).</p> | <p>Verify that the following information pertaining to incinerators is submitted to the permitting authority by 19 February of each year: (10)(15)(16)</p> <ul style="list-style-type: none"> - the concentration of lead, arsenic, cadmium, chromium, and nickel in the sewage sludge fed to the incinerator - the total hydrocarbons concentration in the exit gas from the sewage sludge incinerator stack - information that indicates the National Emissions Standards for beryllium and mercury are met - the combustion temperatures, including the maximum combustion temperature for the incinerator - values for the air pollution control device operating parameters - the oxygen concentrations and information used to measure moisture content in the exit gas from the sewage sludge incinerator stack - the sewage sludge feed rate - the stack height for the incinerator - the dispersion factor for the site where the incinerator is located - the control efficiency for lead, arsenic, cadmium, chromium, and nickel for each incinerator - the risk specific concentrations for chromium - a calibration and maintenance log for the instruments used to measure the total hydrocarbons and oxygen content in the exit gas and the combustion temperature. |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers

Appendix 11-1

Operations Excepted from Electroplating Point Source Effluent Limitations

Operations similar to electroplating, but which are specifically excepted include:

1. electrowinning and electrorefining conducted as part of nonferrous metal smelting and refining
2. metal surface preparation and conversion coating conducted as part of coil coating
3. metal surface preparation and immersion plating or electroless plating conducted as part of porcelain enameling
4. electrodeposition of active electrode materials, electroimpregnation, and electroforming conducted as a part of battery manufacturing
5. metallic platemaking and gravure cylinder preparation conducted with or for printing and publishing facilities, and continuous strip electroplating conducted within iron and steel manufacturing facilities, which introduce pollutants into a POTW.

Appendix 11-1 (continued)

Table 1

| If the maximum for any 1 day is | And the 4 day average is | Then the 30 day average is |
|---------------------------------------|--------------------------------|----------------------------------|
| 0.6 | 0.4 | 0.3 |
| 1.2 | .7 | .5 |
| 1.9 | 1 | .55 |
| 4.1 | 2.6 | 1.8 |
| 4.2 | 2.6 | 1.8 |
| 4.2 | 2.6 | 1.8 |
| 4.5 | 2.7 | 1.8 |
| 5.0 | 2.7 | 1.5 |
| 7.0 | 4 | 2.5 |
| 10.5 | 6.8 | 5 |
| 20.0 | 13.4 | 10 |
| 23 | 16 | 12 |
| 47 | 29 | 20 |
| 53 | 36 | 27 |
| 74 | 39 | 21 |
| 107 | 65 | 45 |
| 169 | 89 | 49 |
| 160 | 100 | 70 |
| 164 | 102 | 70 |
| 176 | 105 | 70 |
| 273 | 156 | 98 |
| 365 | 229 | 160 |
| 374 | 232 | 160 |
| 401 | 241 | 160 |
| 410 | 267 | 195 |
| 623 | 257 | 223 |
| 935 | 609 | 445 |

From 40 CFR 413.04

Appendix 11-1 (continued)

Table 2

**All Subcategory Facilities Discharging
Less than 38,000 L/Day PSES* Limitations (mg/L)**

| Pollutant or pollutant property | Maximum for any 1 day | Maximum average values for 4 consecutive days |
|------------------------------------|-----------------------------|---|
| CN,A | 5.0 | 2.7 |
| Pb | 0.6 | 0.4 |
| Cd | 1.2 | 0.7 |

From 40 CFR 413.14(b), 413.54(b), and 413.74(b)

Table 3

**All Subcategory Facilities Discharging
38,000 L or More Per Day Limitations (mg/L)**

| Pollutant or pollutant property | Maximum for any 1 day | Maximum average values for 4 consecutive days |
|------------------------------------|-----------------------------|---|
| CN,T | 1.9 | 1.0 |
| Cu | 4.5 | 2.7 |
| Ni | 4.1 | 2.6 |
| Cr | 7.0 | 4.0 |
| Zn | 4.2 | 2.6 |
| Pb | 0.6 | 0.4 |
| Cd | 1.2 | 0.7 |
| Total metals | 10.5 | 6.8 |

From 40 CFR 413.14(c), 413.54(c), and 413.74(c)

Appendix 11-1 (continued)

Table 4

All Subcategory Facilities Discharging
38,000 L or More Per Day PSES* Limitations (mg/L)

| Pollutant or pollutant property | Maximum for any 1 day | Maximum average values for 4 consecutive days |
|------------------------------------|-----------------------------|---|
| CN,T | 1.9 | 1.0 |
| Pb | 0.6 | 0.4 |
| Cd | 1.2 | 0.7 |
| TSS** | 20.0 | 13.4 |
| pH | (¹) | (¹) |

(¹)Within the range 7.5 to 10.0

From 40 CFR 413.14(e), 413.54(e), and 413.74(e)

* PSES - Pretreatment Standard for Existing Sources

** TSS - Toxic Suspended Solids

Appendix 11-2

Metal Finishing Point Sources

Process Operations with Point Source Effluent Limitations

Nonferrous metal smelting and refining
 Coil coating
 Porcelain enameling
 Battery manufacturing
 Iron and steel
 Metal casting foundries
 Aluminum forming
 Copper forming
 Plastic molding and forming
 Nonferrous forming
 Electrical and electronic components

Table 1
BAT*

| Pollutant or pollutant property | Maximum for any 1 day | Maximum monthly average |
|---------------------------------|--------------------------|-------------------------------|
| mg/L | | |
| Cadmium (T) | 0.69 | 0.26 |
| Chromium (T) | 2.77 | 1.71 |
| Copper (T) | 3.38 | 2.07 |
| Lead (T) | 0.69 | 0.43 |
| Nickel (T) | 3.98 | 2.38 |
| Silver (T) | 0.43 | 0.24 |
| Zinc (T) | 2.61 | 1.48 |
| Cyanide (T) | 1.20 | 0.65 |
| TTO | 2.13 | |

From 40 CFR 433.14(a) and 433.14(a)

* BAT - Best Available Technology

Appendix 11-2 (continued)

Table 2
New Source Performance Standards (NSPS)

| Pollutant or pollutant property | Maximum for any 1 day | Maximum monthly average |
|---------------------------------|--------------------------|-------------------------------|
| mg/L | | |
| Cadmium (T) | 0.11 | 0.07 |
| Chromium (T) | 2.77 | 1.71 |
| Copper (T) | 3.38 | 2.07 |
| Lead (T) | 0.69 | 0.43 |
| Nickel (T) | 3.98 | 2.38 |
| Silver (T) | 0.43 | 0.24 |
| Zinc (T) | 2.61 | 1.48 |
| Cyanide (T) | 1.20 | 0.65 |
| TTO | 2.13 | |
| Oil and Grease | 52.00 | 26.00 |
| TSS | 60.00 | 31.00 |
| pH | (¹) | (¹) |

¹ Within 6.0 - 9.0 From 40 CFR 433.16(a)

Table 3
Pretreatment Standards for New Indirect Sources (PSNS)

| Pollutant or pollutant property | Maximum for any 1 day | Maximum monthly average |
|---------------------------------|--------------------------|-------------------------------|
| mg/L | | |
| Cadmium (T) | 0.11 | 0.07 |
| Chromium (T) | 2.77 | 1.71 |
| Copper (T) | 3.38 | 2.07 |
| Lead (T) | 0.69 | 0.43 |
| Nickel (T) | 3.98 | 2.38 |
| Silver (T) | 0.43 | 0.24 |
| Zinc (T) | 2.61 | 1.48 |
| Cyanide (T) | 1.20 | 0.65 |
| TTO | 2.13 | |

From 40 CFR 433.17(a)

Appendix 11-3

Cumulative Pollutant Loading Rates for Sludge (40 CFR 503.13(b)(2))

| Pollutant | Cumulative Pollutant Loading Rate (kg/hectare) |
|------------|---|
| Arsenic | 41 |
| Cadmium | 39 |
| Chromium | 3000 |
| Copper | 1500 |
| Lead | 300 |
| Mercury | 17 |
| Molybdenum | 18 |
| Nickel | 420 |
| Selenium | 100 |
| Zinc | 2600 |

Appendix 11-4

Ceiling Concentrations for Sludge (40 CFR 503.13(b)(1))

| Pollutant | Ceiling Concentration (mg/kg, dry weight basis) |
|------------|--|
| Arsenic | 75 |
| Cadmium | 85 |
| Chromium | 3000 |
| Copper | 4300 |
| Lead | 640 |
| Mercury | 57 |
| Molybdenum | 75 |
| Nickel | 420 |
| Selenium | 100 |
| Zinc | 7500 |

Appendix 11-5

Pollutant Concentrations for Sludge (40 CFR 503.13(b)(3))

| Pollutant | Monthly Average Concentrations (mg/kg, dry weight basis) |
|------------|---|
| Arsenic | 41 |
| Cadmium | 39 |
| Chromium | 1200 |
| Copper | 1500 |
| Lead | 300 |
| Mercury | 17 |
| Molybdenum | 18 |
| Nickel | 420 |
| Selenium | 36 |
| Zinc | 2800 |

Appendix 11-6

Annual Pollutant Loading Rates (40 CFR 503.13(b)(3))

| Pollutant | Annual Pollutant Loading Rates (kg/hectare/365-day period) |
|------------|---|
| Arsenic | 41 |
| Cadmium | 39 |
| Chromium | 1200 |
| Copper | 1500 |
| Lead | 300 |
| Mercury | 17 |
| Molybdenum | 18 |
| Nickel | 420 |
| Selenium | 36 |
| Zinc | 2800 |

Appendix 11-7

Frequency of Monitoring - Land Application, Surface Disposal, and Incineration (40 CFR 503.16, Table 1, 503.26, Table 1, and 503.46, Table 1)

| Amount of Sewage sludge* (metric tons per 365 day period) | Frequency |
|--|---|
| Greater than zero but less than 290 [285.42 long tons] | Once per year |
| Equal to or greater than 290 [285.42 long tons] but less than 1500 [1476.31 long tons] | Once per quarter (four times per year) |
| Equal to or greater than 1500 [1476.31 long tons] but less than 15,000 [14,763.10 long tons] | Once per 60 days (six times per year) |
| Equal to or greater than 15,000 [14,763.10 long tons] | Once per month |

* Either the amount of bulk sewage sludge applied to the land or the amount of sewage sludge received by a person who prepares sewage sludge that is sold or given away in a bag or other container for application to the land (dry weight basis).

Appendix 11-8

Pollutant Concentrations for An Active Sewage Sludge Unit (40 CFR 503.23, Table 2)

| Unit Boundary to property site | Pollutant Concentration ¹ | | |
|-----------------------------------|--------------------------------------|-------------------|-----------------|
| | Arsenic mg/kg | Chromium mg/kg | Nickel mg/kg |
| Distance (m) | | | |
| 0 to less than 25 | 30 | 200 | 210 |
| 25 to less than 50 | 34 | 220 | 240 |
| 50 to less than 75 | 39 | 260 | 270 |
| 75 to less than 100 | 46 | 300 | 320 |
| 100 to less than 125 | 53 | 360 | 390 |
| 125 to less than 150 | 62 | 450 | 420 |

¹ Dry weight basis

Appendix 11-9

Lead Concentration in Sewage Sludge Fed to an Incinerator (40 CFR 503.43)

Formula 1

$$C = \frac{0.1 * NAAQS * 86,400}{DF * (1 - CE) * SF}$$

Where:

C = Daily concentration of lead in sewage sludge in mg/kg of total solids (dry weight basis).

NAAQS = National Ambient Air Quality Standard for lead in micrograms per cubic meter.

DF = Dispersion factor in $\mu\text{g}/\text{m}^3/\text{g}/\text{s}$.

CE = Sewage sludge incinerator control efficiency for lead in hundredths.

SF = Sewage sludge feed rate in metric tons per day (dry weight basis).

Formula 2

$$C = \frac{RSC * 86,400}{DF * (1 - CE) * SF}$$

Where:

C = Daily concentration of arsenic, cadmium, chromium, or nickel in sewage sludge in mg/kg of total solids (dry weight basis).

CE = Sewage sludge incinerator control efficiency for arsenic, cadmium, chromium, or nickel in hundredths.

DF = Dispersion factor in $\mu\text{g}/\text{m}^3/\text{g}/\text{s}$.

RSC = Risk specific concentration in $\mu\text{g}/\text{m}^3$.

F = Sewage sludge feed rate in metric tons per day (dry weight basis).

Appendix 11-10

Total Hydrocarbon Operational Standards (40 CFR 503.44)

Formula 1

$$\text{Correction factor (percent moisture)} = \frac{1}{(1 - X)}$$

Where:

X = decimal fraction of the percent moisture in the sewage sludge incinerator exit gas in hundredths.

Formula 2

$$\text{Correction factor (oxygen)} = \frac{14}{(21 - Y)}$$

Where:

Y = Percent oxygen concentration in the sewage sludge incinerator stack exit gas (dry volume/dry volume).

Section 12

Water Quality Management

SECTION 12

WATER QUALITY MANAGEMENT

A. Applicability

This section applies to all water, surface or ground, used or managed by the U.S. Army Corps of Engineers (USACE).

This section identifies rules, regulations, and requirements for any USACE facility that has jurisdiction over any public water supply system. A public water system is defined as a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes:

- any collection, treatment, storage, and distribution facilities under control of the operator of such system, and
- any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

A public water system is either a *community water system* or a *noncommunity water system* (40 Code of Federal Regulations (CFR) 141.2).

Corps facilities that meet all the criteria listed below are not required to comply with the requirements of the *Safe Drinking Water Act (SDWA)* because, by definition, they are not *public water systems* (42 U.S. Code (USC) 300(g)(g)):

1. system consists only of distribution and storage facilities and does not have any collection and treatment facilities
2. Corps facility obtains all of its water from a public water system that is owned or operated by another party (non-Army)
3. Corps facility does not sell water to any party.

Additionally, systems supplying less than 150 service connections will be treated as complying with sampling regulations if the system provides water samples or the opportunity for sampling by the U.S. Environmental Protection Agency (USEPA) (942 USC 300j-4(7)).

Even though the above criteria may apply to a Corps facility, as a practical matter, Corps regulations require compliance with drinking water standards and monitoring requirements. Therefore, this protocol should be used to determine compliance with drinking water requirements even though some items may be noted as not applicable (N/A) by the evaluator.

B. Federal Legislation

- The *Safe Drinking Water Act (SDWA)*. This Act, Public Law (PL) 99-339, 42 U.S. Code (USC) 201, 300f-300j-25, 6939b, 6979a, 6979b, 7401-742, etc., is the Federal legislation that regulates the safety of drinking water in the country. It specifies a system for the protection of drinking water supplies through establishment of contaminant limitations and enforcement procedures. The USEPA has promulgated contaminant limitations in two phases: primary drinking water standards to protect public health; and secondary drinking water standards affecting the aesthetic qualities of drinking water. In addition, the *SDWA* mandates the regulation of underground drinking wells to protect drinking water sources through the Underground Injection Control (UIC) Program.

The 1986 amendments to the *SDWA* (Section 1428) require states to develop programs to protect wellhead areas. Section 1428(h) requires all Federal agencies with jurisdiction over any potential source of contaminants identified by a state wellhead protection program to be subject to, and comply with, all requirements of the state program "as any other person, including payment of reasonable charges and fees."

National primary drinking water regulations apply to each public water system in each state. However, such regulations do not apply to a public water system that (42 USC 300g):

1. consists only of distribution and storage facilities (and does not have any collection and treatment facilities)
 2. obtains all of its water from, but is not owned or operated by, a public water system to which such regulations apply
 3. does not sell water to any person
 4. is not a carrier which conveys passengers in interstate commerce.
- Executive Order (EO) 12088, *Federal Compliance with Pollution Standards*, of 13 October 1978 requires Federally owned and operated facilities to comply with applicable Federal, state, and local pollution control standards. It makes the head of each executive agency responsible for seeing to it that the agencies, facilities, programs, and activities the agency funds meet applicable Federal, state, and local environmental requirements or for correcting situations which are not in compliance with such requirements. In addition, the EO requires that each agency ensure that sufficient funds for environmental compliance are included in the agency budget.

C. State/Local Regulations

- States have primary responsibility to enforce compliance with national primary drinking water standards and sampling, monitoring, and notice requirements in conformance with 40 CFR 141. The USEPA executes the enforcement responsibilities until individual state programs are approved.

States that have primacy may establish drinking water regulations, monitoring schedules, and reporting requirements more stringent than, or in addition to, those in the Federal regulations. Corps public water systems in these states are required to comply with these additional requirements. Generally speaking, most states that have primacy adopt drinking water regulations that closely reflect the Federal requirements. Almost all states have achieved authorization from the USEPA to administer drinking water compliance programs, including UIC programs.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- Engineering Manual (EM) 385-1-1, *Safety and Health Requirements*. Although this is a manual and not an ER, the contents are applicable to all missions under the command of the Chief of Engineers, whether accomplished by military, civilian, or contractor forces.
- ER 1130-2-334, *Reporting of Water Quality Management Activities at Corps Civil Works Activities*. This regulation requires facilities to manage water quality at all Corps projects. Specific water quality objectives and procedures for each project are to be established in division-wide water quality management programs. This regulation also sets forth reporting requirements for water quality at the division and facility level.
- ER 1130-2-407, *Operating and Testing Potable Water Systems in Compliance With the Safe Drinking Water Act*. This regulation requires all Civil Works projects that provide potable water to meet or exceed the standards set forth in the SDWA, 40 CFR 141.
- ER 1130-2-415, *Water Quality Data Collection, Interpretation, and Application Activities*. This regulation requires all Corps projects to establish water quality data collection techniques. These techniques will be unique to each project, and thus are to be determined by specific project conditions.

- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, land, and water at Civil Works projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- Civil Work Facilities Operated by Others - In civil works facilities that are operated by others, the District Engineer is responsible for determining if satisfactory water quality surveillance programs are instituted, including regular testing (ER 1130-2-417, para 9).
- Facilities with Hydrologic Structures - If the facility maintains any hydrologic related structures, or conducts or authorized construction activities pertaining to such structures, certain analyses of water quality and data collection techniques must be followed during preconstruction, construction, and post-construction phases of the operation (1130-2-415, para 4-7).
- Plans and Records - The facility and project manager must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr. The Environmental Compliance Manager should review plans for water system modifications. Facilities are required to survey public water systems and maintain records of those reviews (GMP, 40 CFR 141.21(d), and 141.33(b)).
- Physical Requirements for Drinking Water Systems - There will not be any cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water. All water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state. Containers for drinking water are required to be marked as such (EM 385-1-1 and 40 CFR 141.80(d)).
- Maximum Contaminant Level (MCL) Standards - Drinking water is to be supplied from sources approved by Federal, state, or local health authorities, or treated to specific standards. Community water systems, noncommunity water systems, except as defined under *exempted water systems*, and community and nontransient, noncommunity water systems, are required to meet specific MCLs for organic, inorganic, and microbiological contaminants. These are outlined in Appendices 12-1 and 12-2 (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, 141.16(a), and 141.60 through 141.63).

- **Monitoring** - the monitoring schedule, and what constituents are to be monitored, is based on the type of facility being operated. Facilities with community water systems and/or nontransient, noncommunity water systems are required to monitor for inorganic contaminants. All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels. Monitoring for Endrin is required to be done according to specific schedules. Community and noncommunity water systems are required to monitor for total coliforms and facilities are required to monitor for radioactivity in community water systems (40 CFR 141.21(a), 141.23, 141.24, and 141.26).
- **Total Coliform and Turbidity Sampling** - Total Coliform samples are required to be collected at regular intervals throughout the month except at systems that use only groundwater and serve 4900 people or fewer. Public water systems that use surface water or groundwater under the direct influence of surface water and do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result. Sampling for turbidity is required to be done at public water systems that use water obtained in whole or part from surface water sources, according to a specific schedule, and excesses reported (40 CFR 141.21 and 141.22).
- **Water Analysis** - Facilities with community water systems that add a disinfectant to the water are required to analyze for total trihalomethanes. Suppliers of water for community public water systems are required to analyze for sodium, and collect samples from representative entry points to the water distribution system and analyze for corrosivity. Bacteriological analysis of samples used to determine compliance with MCLs must be performed in a state-approved lab or by a state-approved individual (40 CFR 141.28, 141.30, 141.41, and 141.42).
- **Filtration and Disinfection** - Facilities that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants which meets specific standards, provide disinfection treatment by 29 June 1993, and report specific information monthly to the state starting 29 June 1993, or when filtration is installed, unless otherwise exempted. These criteria include a fecal coliform concentration less than or equal to 20/100 mL, a turbidity level below 5 NTU, and maintaining a watershed control program for *Giardia lamblia*. If a facility does not need to provide filtration, it is required to provide disinfection treatment and report monthly to the state. The USEPA has set certain standards for analytic procedures that must be used and followed to demonstrate compliance with disinfection and filtration requirements. Disinfection of Corps water supply systems

with nonpotable water is required under specific circumstances, such as after construction or major repair or flooding (40 CFR 141.71 through 141.75(b) and ER 1130-2-407, para 8).

- **Notification and Reporting Requirements** - Records of chemical analyses are required to be kept for not less than 10 yr. When Primary Drinking Water Standards are exceeded, public notifications must be made. Facilities that operate public water systems must send reports to the state on any failure to comply with applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31, 141.32 and 141.33(a)).
- **Lead and Copper in Drinking Water Systems** - Facilities with community or nontransient, noncommunity water systems must notify their users about lead in drinking water systems and must meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded. Facilities with water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines. Monitoring for lead and copper is required to start on a specified date, be done at a specified number of sites, fulfill specific reporting requirements, and retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (see 40 CFR 141.80, 141.84, 141.85, 141.86, 141.90, and 141.91).
- **Recreational Waters** - Recreational potable water sources, such as hand-pumps, are considered to be noncommunity water systems and are required to meet specific monitoring requirements. Appropriate water quality must be maintained at beaches where people swim. Facilities that own or operate swimming pools must maintain and monitor water quality (ER 1110-1-400, para 6 and 1130-2-407, para 5 and 6; EM 1110-1-400, para 7-4; and TM 5-662).
- **Emergency Water Supplies** - Facilities authorized to provide emergency supplies of clean drinking water to localities confronted with contaminated drinking water or those areas that have been designated as drought-distressed must meet specific requirements (33 CFR 203.51 and 203.52).

F. Key Compliance Definitions

These definitions were obtained from the regulations listed previously.

- **Action Level** - the concentration of lead or copper in the water specified in 40 CFR 141.80(c) which determines, in some cases, the treatment requirements that a water system is required to complete (40 CFR 141.2).

- *Best Available Technology (BAT)* - the best technology treatment techniques, or other means which the administrator finds, examined for efficacy under field conditions and not solely under lab conditions, that are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon (40 CFR 141.2).
- *Coagulation* - a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs (40 CFR 141.2).
- *Community Water System* - a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents (40 CFR 141.2).
- *Contaminant* - any physical, chemical, biological, or radiological substance or matter in water (40 CFR 141.2).
- *Conventional Filtration Treatment* - a series of processes, including coagulation, flocculation, sedimentation, and filtration, resulting in substantial particulate removal (40 CFR 141.2).
- *Diatomaceous Earth Filtration* - a process resulting in substantial particulate removal in which (40 CFR 141.2):
 1. a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and
 2. while the water is filtered by passing through the cake on the septum, additional filter media known as *body feed* is continuously added to the feed water to maintain the permeability of the filter cake.
- *Direct Filtration* - a series of processes, including coagulation and filtration, but excluding sedimentation, resulting in substantial particulate removal (40 CFR 141.2).
- *Disinfectant* - any oxidant, including, but not limited to, chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms (40 CFR 141.2).
- *Disinfection* - a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents (40 CFR 141.2).

- *Domestic or Other Nondistribution System Plumbing Problem* - a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken (40 CFR 141.2).
- *Exempted Public Water Systems* - the following are public water systems which are not required to meet the standards outlined in 40 CFR 141 (40 CFR 141.3):
 1. systems that consist only of distribution and storage facilities and do not have any collection and treatment facilities
 2. systems that obtain all of their water from, but are not owned or operated by, a public water system to which 40 CFR 141 applies
 3. systems that do not sell water to any person
 4. systems that are not a carrier which conveys passengers in interstate commerce.
- *Filtration* - a process for removing particulate matter from water by passage through porous media (40 CFR 141.2).
- *Flocculation* - a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means (40 CFR 141.2).
- *Good Management Practice (GMP)* - practices that, although not mandated by law, are encouraged to promote safe operating procedures.
- *Gross Alpha Particle Activity* - the total radioactivity due to alpha particle emissions as inferred from measurements on a dry sample (40 CFR 141.2).
- *Groundwater Under the Direct Influence of Surface Water* - refers to any water beneath the surface of the ground with:
 1. significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or
 2. significant and relatively rapid shifts in water characteristics, such as turbidity, temperature, conductivity, or pH, which closely correlate to climatological or surface water conditions.

Direct influence must be determined for individual sources in accordance with criteria established by the state (40 CFR 141.2).

- *Halogen* - one of the chemical elements chlorine, bromine, or iodine (40 CFR 141.2).
- *Initial Compliance Period* - the first full 3-yr compliance period which begins at least 18 mo after promulgation, except for Dichloromethane, 1,2,4-Trichlorobenzene, 1,1,2-Trichloroethane, Benzo(a)pyrene, Dieldrin, DDT, and Endrin.

ethyhexyl) adipate, Di(2-ethyhexyl) phthalate, Dinoseb, Diquat, Endrin, Endothall, Glyphosate, Hexachlorobenzene, Hexachlorocyclopentadiene, Oxamyl (Vydate), Picloram, Simazine, 2,3,7,8-TCDD (Dioxin), Antimony, Beryllium, Cyanide (as free Cyanide), Nickel, and Thallium; initial compliance period means the first full 3-yr compliance period after promulgation for systems with 150 or more service connections (January 1993 - December 1995), and first full 3-yr compliance period after the effective date of the regulation (January 1996 - December 1998) for systems having fewer than 150 service connections (40 CFR 141.2).

- *Large Water System* - in reference to lead and copper in systems, this refers to a water system that services more than 50,000 people (40 CFR 141.2).
- *Lead Service Line* - a service line made of lead, which connects the water main to the building inlet, and any lead pigtail, gooseneck, or other fitting which is connected to such a lead line (40 CFR 141.2).
- *Legionella* - means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires' Disease (40 CFR 141.2).
- *Maximum Contaminant Level (MCL)* - the maximum permissible level of a contaminant in water that is delivered to any user of a public water system (40 CFR 141.2).
- *Maximum Contaminant Level Goal (MCLG)* - refers to the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are nonenforceable health goals (40 CFR 141.2).
- *Maximum Total Trihalomethane Potential* - means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 °C [77 °F] or above (40 CFR 141.2).
- *Medium Size Water System* - in reference to lead and copper in systems, this refers to a water system that serves greater than 3300 and less than or equal to 50,000 people (40 CFR 141.2).
- *Near the First Service Connection* - means at one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system (40 CFR 141.2).
- *Noncommunity Water System* - a public water system that is not a *community water system* (40 CFR 141.2).

- *Nontransient, Noncommunity Water System (NTNCWS)* - a public water system that is not a *community water system* and regularly serves at least 25 of the same people over 6 mo/yr (40 CFR 141.2).
- *Person* - an individual, corporation, company, association, partnership, municipality, or state, Federal, or tribal agency (40 CFR 141.2).
- *PicoCurie (pCi)* - quantity of radioactive material producing 2.22 nuclear transformations/min (40 CFR 141.2).
- *Point of Disinfectant Application* - the point where the disinfectant is applied, and water downstream of that point is not subject to recontamination by surface water runoff (40 CFR 141.2).
- *Point-of-Entry Treatment Device* - a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building (40 CFR 141.2).
- *Point-of-Use Treatment Device* - a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap (40 CFR 141.2).
- *Public Water System* - a system for providing piped water to the public for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. This term includes any:
 1. collection, treatment, storage, and distribution facilities under control of the operator of such system
 2. collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

A public water system is either a *community water system* or a *noncommunity water system* (40 CFR 141.2).

- *Rem* - the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem (40 CFR 141.2).
- *Residual Disinfectant Concentration* - (*C* in CT calculations) is the concentration of disinfectant measured in milligrams per liter in a representative sample of water (40 CFR 141.2).

- *Sanitary Survey* - an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation, and maintenance for producing and distributing safe drinking water (40 CFR 141.2).
- *Sedimentation* - a process for removal of solids before filtration by gravity or separation (40 CFR 141.2).
- *Slow Sand Filtration* - a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h [1.31 ft/h]) resulting in substantial particulate removal by physical and biological mechanisms (40 CFR 141.2).
- *Standard Sample* - the aliquot of finished drinking water that is examined for the presence of coliform bacteria (40 CFR 141.2).
- *State* - the agency of the state or tribal government that has jurisdiction over public water systems. During any period when a state or tribal government does not have primary enforcement responsibility pursuant to Section 1413 of the SDWA (42 USC 300g-2), the term *state* means the Regional Administrator of the USEPA (40 CFR 141.2).
- *Supplier of Water* - any person who owns or operates a public water system (40 CFR 141.2).
- *Surface Water* - all water that is open to the atmosphere and subject to surface runoff (40 CFR 141.2).
- *System with a Single Service Connection* - a system that supplies drinking water to consumers via a single service line (40 CFR 141.2).
- *Total Trihalomethanes (TTHM)* - the sum of the concentration in milligrams per liter of the trihalomethane compounds rounded to two significant figures (40 CFR 141.2).
- *Trihalomethane (THM)* - one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure (40 CFR 141.2).
- *Virus* - means a virus of fecal origin which is infectious to humans by water-borne transmission (40 CFR 141.2).

- *Waterborne Disease Outbreak* - the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or state agency (40 CFR 141.2).

WATER QUALITY MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

| | REFER TO CHECKLIST ITEMS: | CONTACT THESE PERSONS OR GROUPS:(a) |
|-----------------------------|---------------------------------|--|
| All Facilities | 12-1 through 12-10 | (5)(6)(7)(10)(13)(15)(16)(17) |
| Drinking Water | | |
| General | 12-11 through 12-15 | (5)(10)(13)(15)(16) |
| Standards | 12-16 through 12-19 | (5)(10)(15)(16) |
| Monitoring/Sampling | 12-20 through 12-39 | (10)(15)(16) |
| Disinfection and Filtration | 12-40 through 12-47 | (10)(15)(16) |
| Notification and Reporting | 12-48 through 12-51 | (10)(15)(16) |
| Requirements | | |
| Lead and Copper | 12-52 through 12-63 | (10)(15)(16) |
| in Drinking Water Systems | | |
| Sole Source Aquifers | 12-64 | (10)(13)(15)(16) |
| Recreational Waters | 12-65 through 12-67 | (7)(10)(13)(15)(16) |
| Emergency Water Supplies | 12-68 | (10)(15)(16) |

(a)CONTACT/LOCATION CODE:

- (1) Division Office - Natural Resources Management
- (2) Division Office - Engineering
- (3) Division Office - Safety and Occupational Health Office
- (4) Division Office - Operations
- (5) District Office - Environmental Compliance Coordinator (ECC)
- (6) District Office - Natural Resources Management
- (7) District Office - Engineering
- (8) District Office - Safety and Occupational Health Office
- (9) District Office - Logistics
- (10) District Office - Operations
- (11) District Office - Cultural/Historic Resources
- (12) District Office - Real Estate
- (13) District Office - Planning
- (14) District Office - Emergency Management
- (15) Project - Project Resource Manager
- (16) Project - Facility Managers (See Descriptions in POC Section of Introduction at beginning of manual)
- (17) Lab Manager

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

WATER QUALITY MANAGEMENT

Records to Review

- Bacterial and chemical analyses of drinking water, including sampling dates and locations, dates of analyses, analytical methods used, and results of analyses
- Monthly operating reports (flow, chlorine residual, etc)
- State and public notification of noncompliance with primary drinking water regulations
- Action taken by the facility to correct violations of primary drinking water regulations
- Sanitary surveys of the water system conducted by the facility itself, a private consultant or any local, state, or Federal Agency
- Public notification of noncompliance with secondary MCL for fluoride
- Variance or exemption granted to the facility for its water supply system
- Permit authorizing the operation of an underground injection well
- Records of planning and construction of injection wells
- Results of injection well monitoring
- Records, including any petition for review, of facility projects that may potentially cause contamination of a sole source aquifer through its recharge zone
- Waivers from the state

Physical Features to Inspect

- Drinking water collection, treatment, and distribution facilities
- Laboratory analysis facilities
- Underground injection wells
- Swimming pools

People to Interview

- Environmental Compliance Coordinator (ECC) (District)
- Natural Resources Management (District)
- Engineering (District)
- Operations
- Planning
- Project Resource Manager
- Facility Managers

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. The chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 12-1 through 12-10 | 12-1 through 12-10 |
| 12-11 | 12-13 |
| 12-12 | no match |
| 12-13 | 12-14 |
| 12-14 | 12-11 |
| 12-15 | 12-15 |
| 12-16 | 12-12 |
| 12-17 through 12-21 | 12-16 through 12-20 |
| 12-22 through 12-25 | 12-23 through 12-26 |
| 12-26 through 12-44 | 12-29 through 12-47 |
| 12-45 | no match |
| 12-46 and 12-47 | 12-48 and 12-49 |
| no match | 12-50 |
| 12-48 | 12-51 |
| no match | 12-52 and 12-53 |
| 12-49 and 12-50 | 12-54 and 12-55 |
| no match | 12-56 and 12-57 |
| 12-51 and 12-52 | 12-58 and 12-59 |
| no match | 12-60 and 12-61 |
| 12-53 through 12-59 | 12-62 through 12-68 |

| | | | |
|-------------------------|--|-------|--------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: WATER QUALITY MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

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**COMPLIANCE CATEGORY:
WATER QUALITY MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|--|
| <p>ALL FACILITIES</p> <p>12-1. Determine actions or changes since previous review of water quality management (GMP).</p> <p>...</p> <p>12-2. The facility should have access to a current file of applicable Federal, engineering, and state regulations pertaining to water quality (GMP).</p> <p>...</p> | <p>Determine, by examining a copy of the previous report, if noncompliance issues have been resolved. (5)(6)(10)(15)(16)(17)</p> <p>...</p> <p>Determine if the facility is aware of state/local water quality regulations. (15)(16)(17)</p> <p>Verify that the following are current at the facility or district or division office: (5)</p> <ul style="list-style-type: none"> - EO 12088, <i>Federal Compliance with Pollution Control Standards</i>. - 33 CFR 203, <i>Emergency Employment of Army and Other Resources, Natural Disaster Procedures</i>. - 33 CFR 222, <i>Engineering and Design</i>. - 33 CFR 230, <i>Procedures for Implementing NEPA</i>. - 40 CFR 141, <i>National Primary Drinking Water Standards</i>. - 40 CFR 143, <i>National Secondary Drinking Water Regulations</i>. - 40 CFR 149, <i>Sole Source Aquifers</i>. - EM 385-1-1, <i>Safety and Health Requirements Manual</i>, October 1992. - EM 1110-1-400, <i>Recreation, Planning and Design Criteria</i>, 31 July 1987. - Engineer Pamphlet (EP) 1165-2-2, <i>Water Resource Policies and Authorities</i>. - ER 15-2-14, <i>Committees on Tidal Hydraulics, Channel Stabilization, Water Quality, and Hydrology</i>, 24 April 1992. - ER 1110-2-400, <i>Design of Recreation Sites, Areas, and Facilities</i>, 31 May 1988. - ER 1130-2-334, <i>Reporting of Water Quality Management Activities at Corps Civil Works Projects</i>, 20 April 1986. - ER 1130-2-407, <i>Operating and Testing Potable Water Systems in Compliance with the Safe Drinking Water Act (Public Law 93-523)</i>, 10 June 1977. - ER 1130-2-415, <i>Water Quality Data Collection, Implementation, and Application Activities</i>, 28 October 1976. - ER 1165-2-116, <i>Pollution Control at Civil Works Projects</i>, 28 February 1968. - TM 5-662, <i>Swimming Pool Operation and Maintenance</i>. - Applicable state and local regulations. <p>Determine compliance with the terms of the contract for purchase of water to the existing conditions (e.g., quality, quantity, connections, etc.). (7)(10)(15)(16)(17)</p> <p>...</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

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USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>12-3. Facilities are required to comply with state and local water quality regulations (EO 12088, Section 1-1 and ER 1165-2-116, para 3).</p> | <p>Verify that the facility is complying with state and local water quality requirements. (15)(16)</p> <p>Verify that the facility is operating according to permits issued by state or local agencies. (15)(16)</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - more stringent contaminant level requirements - certification and training requirements - water system surveys - reporting requirements - monitoring frequency - use of groundwater - use and maintenance of wells - wellhead protection programs - cross connection control and backflow prevention - O&M practices such as: maintenance of a disinfectant residual throughout the distribution system; proper maintenance of the distribution system; proper disinfection of replaced or repaired mains; main flushing programs; proper operation and maintenance of storage tanks and reservoirs; and continual maintenance of positive water pressure - UIC programs.) |
| <p>12-4. All civil works projects must take impact on water quality into consideration in all stages of design, planning, construction, and operations. Project-specific conditions will determine water quality control and data collection techniques used at each facility (ER 1130-2-415, EP 1165-2-2, and EM 385-1-1, para 02.A.02).</p> | <p>Determine if there are any interagency agreements (Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA)) to assess the facility's responsibility on specific projects. (7)(10)</p> <p>Verify that the requirements of these documents are being followed. (7)(10)(13)</p> <p>Verify that all aspects of design, planning, and construction have assessed pre- and post-project water quality and project impact on all water quality parameters (temperature, nutrient loading, etc.). (7)(10)(13)</p> <p>Verify that only approved potable water systems are used for the distribution of water. (7)(10)(13)</p> <p>Determine what the project specific water quality data collection requirements are, including: (7)(10)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - parameters to be measured - frequency of sampling - number of data collection stations. <p>Verify that water quality control and assessment procedures are implemented and are part of routine management activities. (7)(10)(13)(15)(16)(17)</p> |

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|--|--|
| <p>12-5. In civil works facilities that are operated by others, the District Engineer is responsible for determining if satisfactory water quality surveillance programs are instituted, including regular testing (ER 1130-2-407, para 9).</p> <p style="text-align: center;">...</p> | <p>Verify that appropriate testing and surveillance of water quality is being conducted at all outgranted facilities. (10)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>12-6. If the facility maintains any hydrologic related structures, or conducts or authorizes construction activities pertaining to such structures, certain analyses of water quality and data collection techniques must be followed during preconstruction, construction, and postconstruction phases of the operation (ER 1130-2-415, para 4 through 7).</p> <p style="text-align: center;">...</p> | <p>Verify that the guidelines in the following documents are followed if the facility maintains, constructs, or authorizes construction of a: (7)(10)(13)</p> <ul style="list-style-type: none"> - reservoir: EM 1110-2-1201, <i>Reservoir Water Quality Analyses</i> - deep-draft navigation project: EM 1110-2-1202, <i>Environmental Engineering for Deep-Draft Navigation Projects</i> - shallow-draft waterway: EM 1110-2-1611, <i>Layout and Design of Shallow-Draft Waterways</i> - coastal protection: EM 1110-2-1204, <i>Environmental Engineering for Coastal Protection</i>. <p style="text-align: center;">...</p> |
| <p>12-7. Application of Corps objectives for water quality determination, prediction, and control for reservoirs, inland waterways, coastal water resource projects, and estuarine water projects will be determined by the Committee on Water Quality (ER 15-2-14, para 4c).</p> <p style="text-align: center;">...</p> | <p>Determine if the Committee on Water Quality was contacted for guidance on water quality determination, prediction, and/or control. (7)(10)(13)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>12-8. All Federally funded Corps projects are required to implement the <i>National Environmental Policy Act (NEPA)</i> and applicable regulations in project plan, design, construction, operation, maintenance, and decision making, including impact on water quality (33 CFR 230.5).</p> <p style="text-align: center;">...</p> | <p>Determine what construction projects have started since last review and select a sample of <i>NEPA</i> documentation to review. (10)(13)(15)(16)(17)</p> <p>Verify that an EIS (Environmental Impact Statement) or an EA (Environmental Assessment) was prepared by the District Engineer for each construction project, major maintenance activity, or application for project permit (if applicable). (10)(13)(15)(16)(17)</p> <p>Verify that a Finding of No Significant Impact (FNSI) was prepared, dated, signed, and placed in permanent record if the District Engineer determined that the proposed impact was not significant. (10)(13)(15)(16)(17)</p> <p>Verify that every permit application not requiring an EIS has a Finding of Fact (FOF). (10)(13)(15)(16)(17)</p> <p style="text-align: center;">...</p> |
| <p>12-9. Divisions must establish a division-wide water quality management program (ER 1130-2-334, para 4).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility has a water quality management program. (10)(13)(15)(16)(17)</p> <p>Verify, by examining a copy of the program, that project specific objectives and procedures are being followed (if applicable). (10)(13)(15)(16)(17)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>12-10. Divisions are required to prepare an annual Water Quality Report (33 CFR 222.7(m) (5) and ER 1130-2-334, para 7).</p> <p style="text-align: center;">...</p> | <p>Verify that an annual report is prepared and sent to HQUSACE (DAEN-CWH-W) by 1 February. (10)(13)(15)(16)(17)</p> <p>Verify that the report contains the following: (10)(13)(15)(16)(17)</p> <ul style="list-style-type: none"> - summary of division Water Quality Management Program - description of goals and directives of program - description of progress made toward goals - any changes in technological capabilities - relationship between water quality and water control management activities, pertinent regulations, lab facilities, data management, and/or training needs - research and development needs - special studies completed or required - coordination with other agencies - scheduling - problems with contract work - summary of each project's water quality conditions - ongoing applied research - basic information on all factors affecting water quality for each project including: <ul style="list-style-type: none"> - chemical properties - physical elements - biological elements - watershed - description of data collection. <p style="text-align: center;">...</p> |
| <p>DRINKING WATER</p> <p>General</p> <p>12-11. There will not be any cross-connection, open or potential, between a system furnishing potable water and a system furnishing nonpotable water (EM 385-1-1, para 02.A.07(b)).</p> <p style="text-align: center;">...</p> <p>12-12. Outlets dispensing nonpotable water will be marked conspicuously (EM 385-1-1, para 02.A.07(a)).</p> <p style="text-align: center;">...</p> | <p style="text-align: center;">...</p> <p>Verify that there are not any cross-connections. (5)(15)(16)</p> <p style="text-align: center;">...</p> <p>Determine if nonpotable water is dispensed at the facility. (5)(10)(15)(16)</p> <p>Verify that nonpotable water outlets are marked CAUTION - WATER UNFIT FOR DRINKING, WASHING, OR COOKING. (5)(10)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>12-13. The facility and project manager must keep records of actions taken to correct or repair any part of the treatment and distribution system for at least 3 yr (40 CFR 141.33(b)).</p> <p>...</p> | <p>Determine if facility or operational changes to the water system have taken place since the previous review. Review map of complete potable water system. (10)(13)(15)(16)</p> <p>Verify that as-built drawings are updated to reflect changes in water supply. (10)(13)(15)(16)</p> <p>Determine if there have been operational changes by examining water system records. (10)(13)(15)(16)</p> <p>Verify that water system records are maintained for at least 3 yr. (10)(13)(15)(16)</p> <p>Determine if there are recurring work programs, spare parts and supplies list, equipment calibration, and maintenance history records. (10)(13)(15)(16)</p> <p>...</p> |
| <p>12-14. Facilities are required to survey public water systems according to a specified schedule and maintain records of those reviews (40 CFR 141.21(d) and 141.33(c)).</p> <p>...</p> | <p>Verify that community water systems which do not collect five or more routine bacteriological samples per month have undergone an initial sanitary survey by 29 June 1994 and are then surveyed every 5 yr thereafter. (10)(15)(16)</p> <p>Verify that noncommunity water systems which do not collect five or more routine samples per month have undergone an initial sanitary survey by 29 June 1999 and are then surveyed every 5 yr thereafter. (10)(15)(16)</p> <p>(NOTE: Noncommunity water systems using only protected and disinfected groundwater are only required to conduct a survey every 10 yr after the initial survey.)</p> <p>Verify that records of sanitary system surveys are kept for 10 yr. (10)(15)(16)</p> <p>Verify that the results of the sanitary surveys have been submitted to the state and determine whether the state has requested an alternate monitoring frequency. (10)(15)(16)</p> <p>...</p> |
| <p>12-15. All water systems shall install and operate optimal corrosion control treatment and/or comply with corrosion control requirements specified by the state (40 CFR 141.80(d)).</p> <p>...</p> | <p>Verify that water systems are operating corrosion control systems and/or meeting state requirements. (10)(15)(16)</p> <p>...</p> |

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| <p>Standards</p> <p>12-16. Drinking water is to be supplied from sources approved by Federal, state, or local health authorities or treated to specific standards (EM 385-1-1, para 03.A.01).</p> <p>...</p> <p>12-17. Community water systems, except as defined under <i>exempted water systems</i> in the Definitions, are required to meet specific MCLs for inorganic and organic chemicals, fluorides, radium 226, radium-228, gross alpha particle radioactivity, beta particles and photon radioactivity from manmade radionuclides (40 CFR 141.11(a) through 141.11(c), 141.12, 141.15, and 141.16(a)).</p> <p>...</p> <p>12-18. Noncommunity water systems, except as defined under <i>exempted water systems</i>, will not exceed an MCL for nitrate of 10 mg/L (40 CFR 141.11(a)).</p> <p>...</p> | <p>Determine if the facility receives its drinking water from an approved source. (5)(15)(16)</p> <p>Verify that if the water does not come from an approved source, it is treated chemically or boiled for 10 min. (5)(15)(16)</p> <p>Verify that if sediment is present, the water is clarified. (5)(15)(16)</p> <p>Verify that chemical treatment provides a residual chlorine content of 3/10 to 5/10 ppm. (5)(15)(16)</p> <p>...</p> <p>Verify that combined radium-226 and radium-228 do not exceed 5 pCi/L. (10)(15)(16)</p> <p>Verify that gross alpha particle radioactivity does not exceed 15 pCi/L. (10)(15)(16)</p> <p>Verify that the average annual concentration of beta particles and photon radioactivity from manmade radionuclides does not produce an average dose rate equal to the total body or any internal organ greater than 4 mrem/yr. (10)(15)(16)</p> <p>Verify that the MCL of 4.0 mg/L for fluoride is not exceeded. (10)(15)(16)</p> <p>Verify that the MCLs outlined in Appendix 12-1 and 12-2 are met. (10)(15)(16)</p> <p>...</p> <p>Verify that the nitrate level at noncommunity water systems does not exceed 10 mg/L. (10)(15)(16)</p> <p>...</p> |

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| <p>12-19. Community and nontransient, noncommunity water systems, except as defined under <i>exempted water systems</i>, are required to meet specific MCLs for organic contaminants, inorganic contaminants and microbiological contaminants (40 CFR 141.60 through 141.63).</p> <p style="text-align: center;">...</p> <p>Monitoring/ Sampling</p> <p>12-20. Facilities with community water systems and/or nontransient, noncommunity water systems are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23(a)).</p> | <p>Verify that the standards outlined in Appendix 12-1 and 12-2 are met. (10)(15)(16)</p> <p>Verify that systems which collect at least 40 bacteriological samples per month have no more than 5 percent of the samples collected during a month that are total coliform positive. (10)(15)(16)</p> <p>Verify that systems which collect less than 40 bacteriological samples per month have no more than 1 sample collected per month that is total coliform positive. (10)(15)(16)</p> <p>Verify that there are no fecal coliform-positive repeat sampling or <i>E. Coli</i>-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or <i>E. Coli</i>-positive routine sample. (10)(15)(16)</p> <p style="text-align: center;">...</p> <p>Verify that groundwater systems: (10)(15)(16)</p> <ul style="list-style-type: none"> - take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment beginning in the compliance period starting 1 January 1993 - take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. <p>Verify that surface water systems: (10)(15)(16)</p> <ul style="list-style-type: none"> - take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point that is representative of each source after treatment beginning in the compliance period starting 1 January 1993 - take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment. <p>(NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. (10)(15)(16)</p> <p>(NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one-fifth of the MCL and compositing is done in a laboratory.)</p> |

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| 12-20. (continued) | <p>Verify that if the concentration in a composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, a follow-up sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one-fifth of the MCL in the composite sample. (10)(15)(16)</p> <p>(NOTE: Detection limits for each analytical method and MCLs for each inorganic contaminant are listed in Appendix 12-3.)</p> <p>Verify that for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if an MCL is violated. (10)(15)(16)</p> <p>Verify that for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if an MCL is violated. (10)(15)(16)</p> <p>(NOTE: The state may issue a waiver reducing the required monitoring.)</p> |
| <p>...</p> <p>12-21. Facilities with community and nontransient, noncommunity water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).</p> <p>...</p> | <p>Verify that asbestos is monitored during the first 3 yr compliance period of each 9-yr compliance cycle starting 1 January 1993. (10)(15)(16)</p> <p>(NOTE: The facility may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.)</p> <p>Verify that if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur. (10)(15)(16)</p> <p>Verify that if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos is most likely to occur. (10)(15)(16)</p> <p>Verify that when the MCL is exceeded, monitoring is done quarterly. (10)(15)(16)</p> |
| <p>...</p> <p>12-22. Facilities with community water systems and/or nontransient, noncommunity water systems are required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium (40 CFR 141.23(c)).</p> <p>...</p> | <p>Verify that monitoring is done as follows: (10)(15)(16)</p> <ul style="list-style-type: none"> - groundwater systems take one sample at each sampling point every 3 yr - surface water systems (or combined surface/ground) take one sample annually at each sampling point - when MCLs are exceeded, monitoring is done quarterly. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>12-23. All public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).</p> | <p>Verify that the following schedules are met for monitoring of nitrate: (10)(15)(16)</p> <ul style="list-style-type: none"> - community and nontransient, noncommunity water systems served by groundwater monitor annually starting 1 January 1993 - community and nontransient, noncommunity water systems served by surface water monitor quarterly starting 1 January 1993 - transient noncommunity water systems monitor annually starting 1 January 1993. <p>Verify that when the MCLs for nitrate are exceeded, the following schedules are met for monitoring: (10)(15)(16)</p> <ul style="list-style-type: none"> - community and nontransient, noncommunity water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL. <p>(NOTE: After the initial round of quarterly sampling is completed, each community and nontransient, noncommunity system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.)</p> <p>Verify that public water systems take one sample at each sampling point in the compliance period beginning 1 January 1993 and ending 31 December 1995 for nitrite. (10)(15)(16)</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that community, nontransient, noncommunity and transient noncommunity systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL. (10)(15)(16)</p> <p>Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result. (10)(15)(16)</p> <p>Verify that when nitrate or nitrite samples indicate an exceedance of the MCL, a confirmation sample is taken within 24 h of receipt of the results. (10)(15)(16)</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedance.)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>12-24. Monitoring for Endrin is required to be done according to specific schedules (40 CFR 141.24(a) through 141.24(d)).</p> | <p>Verify that community water systems using surface water sources have completed endrin analyses by 30 July 1993. (10)(15)(16)</p> <p>(NOTE: For community water systems, samples will be taken during the time of the year designated by the state as most likely for pesticide contamination, and the analyses repeated at intervals specified by the state but no less frequently than every 3 yr.)</p> <p>Verify that when the MCL is exceeded, the state is notified within 7 days and three additional analyses are initiated within 1 mo. (10)(15)(16)</p> <p>Verify that when an average of four analyses exceeds the MCL level, the installation must report to the state and give notice to the public and continue to monitor at a frequency designated by the state. (10)(15)(16)</p> <p>(NOTE: Instead of the initial analyses, data for surface water acquired within 1 yr prior to 30 July 1992 and data for groundwater acquired within 3 yr of 30 July 1992 may be substituted at the discretion of the state.)</p> |

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| <p>12-25. Beginning with the initial compliance period, monitoring of the contaminants listed in Table 2 of Appendix 12-1 at community and non-transient, noncommunity water systems is required to be done according to specific parameters (40 CFR 141.24(f)).</p> | <p>Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment. (10)(15)(16)</p> <p>Verify that surface water systems (or combined surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment. (10)(15)(16)</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. (10)(15)(16)</p> <p>Verify that each community and nontransient, noncommunity water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides. (10)(15)(16)</p> <p>(NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.)</p> <p>(NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of sample to one each compliance period.)</p> <p>Verify that if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection. (10)(15)(16)</p> <p>Verify that groundwater systems which have detected one or more of the following two-carbon organic compounds: trichlorethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene monitor quarterly for vinyl chlorides at each sampling point at which one or more of the two-carbon organic compounds was detected. (10)(15)(16)</p> <p>Verify that when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL. (10)(15)(16)</p> |

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| <p>12-26. Monitoring for organic contaminants listed in Table 3 of Appendix 12-1 at community water systems and nontransient, noncommunity water systems is required to be done according to specific parameters (40 CFR 141.24(h)).</p> | <p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment. (10)(15)(16)</p> <p>Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment. (10)(15)(16)</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions. (10)(15)(16)</p> <p>Verify that each community and nontransient, noncommunity water system takes four consecutive quarterly samples for each contaminant during each compliance period starting 1 January 1993. (10)(15)(16)</p> <p>(NOTE: Systems serving more than 3300 persons which do not detect a contaminant in the initial compliance period may reduce sampling to two quarterly samples in 1 yr during each repeat compliance period.)</p> <p>(NOTE: Systems serving less than or equal to 3300 person that do not detect a contaminant in the initial compliance period may reduce sampling to one sample during each repeat compliance period.)</p> <p>Verify that when an organic contaminant is detected (see Appendix 12-4), the system monitors quarterly at each sampling point that resulted in a detection. (10)(15)(16)</p> <p>Verify that if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, and heptachlor, heptachlor epoxide, then subsequent monitoring analyzes for all related contaminants. (10)(15)(16)</p> <p>(NOTE: The state may reduce the number of samples and/or frequency of sampling required.)</p> |

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| <p>12-27. Community and nontransient, noncommunity water systems are required to monitor for specific organic and inorganic contaminants (40 CFR 141.35 and 141.40(a) through 141.40 (m)).</p> | <p>Verify that monitoring is being done for the following contaminants: Chloroform; Bromodichloromethane; Bromoform; Chlorodibromomethane; Chlorobenzene; m-Dichlorobenzene; 1,1-Dichloropropene; 1,1-Dichloroethane; 1,1,2,2-Tetrachloroethane; 1,3-Dichloropropene; Chloromethane; Bromomethane; 1,2,3-Trichloropropane; 1,1,1,2-Tetrachloroethane; Chloroethane; 2,2-Dichloropropane; o-Chlorotoluene; p-Chlorotoluene; Bromobenzene; 1,3-Dichloropropene. (10)(15)(16)</p> <p>Verify that surface water systems sample at points in the distribution system that are representative of each water source or at entry point to the distribution system after any application of treatment. (10)(15)(16)</p> <p>Verify that for surface water systems, the minimum number of samples taken is 1 yr of quarterly samples per water system. (10)(15)(16)</p> <p>Verify that groundwater systems sample at points of entry to the distribution system, representative of each well after any application of treatment. (10)(15)(16)</p> <p>Verify that for groundwater systems, the minimum number of samples taken is one sample taken per entry point to the distribution system. (10)(15)(16)</p> <p>Verify that initial monitoring was done by the dates specified in the following, and that all community and nontransient, noncommunity water systems repeat the monitoring every 5 yr after the specified dates: (10)(15)(16)</p> <table data-bbox="678 1136 1285 1297"> <tr> <th>Number of persons served</th><th>Monitoring to Begin No Later Than:</th></tr> <tr> <td>Over 10,000</td><td>1 January 1988</td></tr> <tr> <td>3300 to 10,000</td><td>1 January 1989</td></tr> <tr> <td>less than 3300</td><td>1 January 1991</td></tr> </table> <p>(NOTE: Public water systems may use monitoring data collected any time after 1 January 1983 to meet the requirements for unregulated monitoring, provided the monitoring program was consistent with these requirements. Additionally, the results of the USEPA's Groundwater Supply Survey may be used in a similar manner for systems supplied by a single well.)</p> <p>(NOTE: The state may require monitoring of additional contaminants.)</p> <p>(NOTE: Instead of doing the monitoring required here, a community water system or nontransient, noncommunity water system serving fewer than 150 service connections may send a letter to the state by 1 January 1991 stating that the system is available for sampling.)</p> <p>Verify that the installation notifies the system's users of the availability of the results of sampling. (10)(15)(16)</p> <p>Verify that the installation sends copies of the monitoring results within 30 days after public notification. (10)(15)(16)</p> | Number of persons served | Monitoring to Begin No Later Than: | Over 10,000 | 1 January 1988 | 3300 to 10,000 | 1 January 1989 | less than 3300 | 1 January 1991 |
| Number of persons served | Monitoring to Begin No Later Than: | | | | | | | | |
| Over 10,000 | 1 January 1988 | | | | | | | | |
| 3300 to 10,000 | 1 January 1989 | | | | | | | | |
| less than 3300 | 1 January 1991 | | | | | | | | |

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| <p>12-28. Monitoring of specific contaminants must be completed by 31 December 1995 (40 CFR 141.35 and 141.40(n)).</p> <p>...</p> | <p>Verify that the substances listed in Appendix 12-5 are monitored for by 31 December 1995. (10)(15)(16)</p> <p>Verify that each community and nontransient, noncommunity water system takes four consecutive quarterly samples for the unregulated organic contaminants listed in Appendix 12-5 at each sampling point, and reports the results to the state. (10)(15)(16)</p> <p>Verify that each community and nontransient, noncommunity water system takes one sample at each sampling point for the unregulated inorganic compounds listed in Appendix 12-5, and reports the results to the state. (10)(15)(16)</p> <p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment, and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment. (10)(15)(16)</p> <p>Verify that surface water systems, including systems with a combination of surface and ground sources, take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment, and that each sample is taken from the same sampling point unless conditions make another sampling point more representative of each source or treatment. (10)(15)(16)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at the entry point to the distribution system during periods of normal operating conditions. (10)(15)(16)</p> <p>Verify that the installation notifies the systems users of the availability of the results of sampling. (10)(15)(16)</p> <p>Verify that the installation sends copies of the monitoring results within 30 days after public notification. (10)(15)(16)</p> <p>...</p> |
| <p>12-29. Community water systems, except as defined as <i>exempted water systems</i>, are required to monitor for total coliforms at a frequency based on the population served by the system (40 CFR 141.21 (a)(2)).</p> <p>...</p> | <p>Verify that the facility's community water system is sampling according to the schedule in Appendix 12-6. (10)(15)(16)</p> <p>...</p> |

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| <p>12-30. Noncommunity water systems, except as defined under <i>exempted water systems</i>, are required to monitor for total coliforms according to a specific schedule (40 CFR 141.21(a)(3)).</p> <p style="text-align: center;">...</p> | <p>Verify that noncommunity water systems using only groundwater (except groundwater under the direct influence of surface water) and serving 1000 persons or fewer monitors each calendar quarter the system provides water to the public. (10)(15)(16)</p> <p>Verify that the following noncommunity water systems are monitoring for total coliforms according to the schedule outlined in Appendix 12-6: (10)(15)(16)</p> <ul style="list-style-type: none"> - systems using only groundwater (except groundwater under the direct influence of surface water) and serving more than 1000 persons during any month - systems using surface water, in total or in part - systems using groundwater under the direct influence of surface water. <p style="text-align: center;">...</p> |
| <p>12-31. Total coliform samples are required to be collected at regular time intervals throughout the month except at system which use only groundwater and serves 4900 persons or fewer (40 CFR 141.21(a)(4)).</p> <p style="text-align: center;">...</p> | <p>Verify that total coliform samples are collected at regular intervals. (10)(15)(16)</p> <p>(NOTE: Systems that use groundwater (except groundwater under the influence of surface water) and serve 4900 persons or fewer may collect all required samples on a single day if they are being taken from different sites.)</p> <p style="text-align: center;">...</p> |
| <p>12-32. Public water systems that use surface water or groundwater under the direct influence of surface water that do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU (40 CFR 141.21(a)(5)).</p> <p style="text-align: center;">...</p> | <p>Verify that when the turbidity exceeded 1 NTU, total coliform samples were taken within 24 h of the first exceedance by reviewing the records on turbidity levels. (10)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>12-33. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result (40 CFR 141.21(b)(1) through 141.21(b)(4), and 141.21(e)(1)).</p> | <p>Verify that if more than one routine sample per month is collected, at least three repeat samples are taken for each total coliform-positive sample found. (10)(15)(16)</p> <p>Verify that if one or fewer routine samples per month is collected, no fewer than four repeat samples are collected for each total coliform-positive sample found. (10)(15)(16)</p> <p>Verify that at least one of the repeat samples is collected from the sampling tap where the original total coliform positive sample was taken (10)(15)(16)</p> <p>Verify that at least one repeat sample was taken at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. (10)(15)(16)</p> <p>Verify that the sampling process is repeated until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms is exceeded, and the state is notified. (10)(15)(16)</p> <p>Verify that all repeat samples are collected on the same day. (10)(15)(16)</p> <p>Verify that if one or more of the repeat samples is total coliform-positive, an additional set of repeat samples is collected within 24 h of notification of the positive result. (10)(15)(16)</p> <p>Verify that if a repeat sample is total coliform-positive, it is also analyzed for fecal coliforms. (10)(15)(16)</p> <p>(NOTE: The system may test for <i>E. coli</i> instead of fecal coliforms.)</p> |
| <p>12-34. Sampling for turbidity is required to be done at public water systems which must install filtration according to a specific schedule until the time at which the systems install filtration (40 CFR 141.22).</p> | <p>Verify that suppliers of water for both community and noncommunity water systems sample for turbidity at a representative entry point to the water distribution system at least once daily. (10)(15)(16)</p> <p>Verify that when the turbidity levels are exceeded, immediate resampling is done. (10)(15)(16)</p> <p>Verify that the state is notified within 48 h. (10)(15)(16)</p> <p>(NOTE: These systems must monitor for turbidity according to 40 CFR 141.73 and 141.74. See checklist items 12-41, 12-43, and 12-47.)</p> |

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| <p>12-35. Facilities are required to monitor for radioactivity in community water systems (40 CFR 141.26).</p> <p>...</p> | <p>Verify that compliance for standards of gross alpha particle activity, radium-226 and radium-228 are based on an annual composite of four consecutive samples obtained at quarterly intervals or the average of the analyses of four samples obtained at quarterly intervals. (10)(15)(16)</p> <p>(NOTE: A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis if the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 percent.)</p> <p>Verify that when the gross alpha particle activity exceeds 5 pCi/L the same or an equivalent sample is analyzed for radium-226 and if the concentration of radium-226 exceeds 3 pCi/L, the same or equivalent sample is analyzed for radium-228. (10)(15)(16)</p> <p>Verify that suppliers of water monitor for gross alpha particle activity, radium-226 and radium-228 every 4 yr and within 1 yr of the introduction of a new water source for a community water system. (10)(15)(16)</p> <p>(NOTE: The state has the power to order additional samples, waive required samples, and impose additional requirements.)</p> <p>Verify that if the MCL for gross alpha particle activity or total radium is exceeded and the installation is the supplier of a community water system, the installation notifies the state and the public of the exceedance. (10)(15)(16)</p> <p>Verify that systems using surface water sources and serving more than 100,000 persons are initially monitored quarterly for compliance with manmade radioactivity limitations, and after the initial analysis monitoring is done at least every 4 yr. (10)(15)(16)</p> <p>Verify that suppliers of any community water system using waters contaminated by nuclear facilities initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium. (10)(15)(16)</p> <p>...</p> |
| <p>12-36. Facilities with community water systems that add a disinfectant to the water are required to analyze for TTHM (40 CFR 141.30).</p> <p>...</p> | <p>(NOTE: The minimum number of samples required is based on the number of treatment plants used by the system.)</p> <p>Verify that community water systems serving a population of 10,000 or more individuals that add a disinfectant to the water and are using surface water sources or using only groundwater sources analyze for TTHM on a quarterly basis on at least four samples. (10)(15)(16)</p> <p>...</p> |

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| <p>12-37. Suppliers of water for community public water systems are required to analyze for sodium (40 CFR 141.41).</p> | <p>Verify that one sample is taken per plant at the entry point of the distribution system annually for systems using surface water in whole or in part and every 3 yr for systems using solely groundwater sources. (10)(15)(16)</p> <p>Verify that the results of the sampling were reported to the USEPA and/or state within 10 days following the end of the required monitoring period or within the first 10 days of the month following the month in which the sample was taken. (10)(15)(16)</p> |
| <p>12-38. Suppliers of water for community water systems shall collect samples from representative entry points to the water distribution system and analyze for corrosivity (40 CFR 141.42).</p> | <p>Verify that the supplier collects two samples per plant for analyses for each plant using surface water sources wholly or in part. (10)(15)(16)</p> <p>Verify that the samples are taken, one in mid-winter and one in mid-summer. (10)(15)(16)</p> <p>Verify that one sample per plant is collected for each plant using groundwater sources. (10)(15)(16)</p> <p>(NOTE: Determination of corrosivity includes measurement of pH, calcium, hardness, alkalinity, temperature, total dissolved solids, and calculation of the Langelier Index.)</p> <p>Verify that the results for the analyses of corrosivity are reported to the USEPA and/or state within the first 10 days of the month following the month in which the sample results were received. (10)(15)(16)</p> <p>(NOTE: The state might require monitoring for additional parameters which may indicate corrosivity, such as sulfates and chlorides.)</p> |
| <p>12-39. Analysis for inorganic chemicals, volatile organic contaminants, pesticides, and bacteria to determine compliance with MCLs must be performed in a state-approved laboratory or by a state-approved individual (40 CFR 141.23(k)(5), 141.24(f)(17), 141.24(l)(19), and 141.28).</p> | <p>Verify that laboratory is approved by reviewing documentation of state certification for laboratory analysis. (10)(15)(16)</p> |

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| <p>Disinfection and Filtration</p> <p>12-40. Facilities that have a public water system that uses surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants unless certain criteria are met (40 CFR 141.71(a) and 141.71(b)).</p> | <p>(NOTE: Public water systems that use a groundwater source under the direct influence of surface are not required to meet these conditions to avoid filtration until 18 mo after the state has determined that the facility is under the direct influence of surface water.)</p> <p>Verify that filtration of drinking water is performed unless all of the following conditions for surface water are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - the fecal coliform concentration is less than or equal to 20/100 mL or total coliform concentration is equal to or less than 100/100 mL in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurement made in the last 6 mo that the system served water to the public on an ongoing basis - the turbidity level does not exceed 5 NTU in representative samples of the source water immediately prior to the first or only point of disinfectant application the unless state determines otherwise and there has not been more than two events in the past 12 mo the system served water to the public or more than five events in the past 120 mo the system served water to the public. <p>Verify that filtration of drinking water is done unless all the following site specific conditions are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - meets the requirements of 40 CFR 141.72(a)(1) (see checklist item 12-43) for disinfection treatment of <i>Giardia Lamblia</i> at least eleven of the twelve previous months. - meets 40 CFR 141.72(a)(2) through 141.72(a)(4) (see checklist item 12-43) at all times - maintains a watershed control program for <i>Giardia Lamblia</i> in the source water, including: <ul style="list-style-type: none"> - identification of watershed characteristics - monitoring occurrence of activities that have adverse effects - demonstration through ownership and/or written agreements that the control of adverse effects of human activities are regulated - submission of annual reports to the state - subjection to annual onsite inspection by the state or a party approved by the state, to assess watershed control program - has not been identified as a source of waterborne disease or threat or has been modified sufficiently to prevent recurrence - complies with MCL for total coliforms as defined in 40 CFR 141.63 for at least 11 of the previous 12 mo (see checklist item 12-20) - complies with requirements for THM as listed on 40 CFR 141.12 and 141.13 (see Appendix 12-1). |

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| <p>12-41. Facilities that do not meet the criteria necessary for exclusion from filtration for public water systems that use a surface water source or a groundwater source under the direct influence of surface water must provide filtration that meets specific standards by 29 June 1993, or within 18 mo after being required to provide filtration, whichever is later (40 CFR 141.73 and 141.74 (c)(2)).</p> | <p>Verify that if conventional or direct filtration is used, the following are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - a turbidity level of 0.5 NTU or less in 95 percent of measurements taken each month - the turbidity level of representative samples of filtered water at no time exceeds 5 NTU. <p>Verify that if slow sand filtration is used, the following are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - the turbidity level of representative samples of a systems filtered water is 1 NTU or less in 95 percent of the monthly measurements - the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU. <p>Verify that if diatomaceous earth filtration is used, the following is met: (10)(15)(16)</p> <ul style="list-style-type: none"> - the turbidity level of representative samples of a systems filtered water is less than or equal to 1 NTU in at least 95 percent of the measurements taken each month - the turbidity level of representative samples of a systems filtered water at no time exceeds 5 NTU. <p>Verify that if other filtration technologies are used, they have been approved by the state. (10)(15)(16)</p> <p>Verify that, as of 29 June 1993, or whenever filtration is installed, turbidity measurements are performed on representative samples of the system's filtered water every 4 h that the system serves water to the public. (10)(15)(16)</p> <p>Verify that, as of 29 June 1993, or whenever filtration is installed, the residual disinfectant concentration of water entering the distribution system is monitored continuously, and the lowest value recorded each day. (10)(15)(16)</p> <p>Verify that, if there is a failure in the continuous monitoring equipment, grab sampling is done every 4 h. (10)(15)(16)</p> |

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WATER QUALITY MANAGEMENT
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: | | | | | | | | | | |
|---|---|---------------------------|-------------|--------|---|-------------|---|--------------|---|--------------|-----|
| <p>12-41. (continued)</p> <p>...</p> | <p>(NOTE: Grab sampling can be done for no more than 5 working days following the failure of the continuous monitoring system.)</p> <p>(NOTE: Systems serving 3300 or fewer person can use grab sampling instead of continuous monitoring if the following daily frequencies are met:</p> <table data-bbox="692 554 1245 722"> <thead> <tr> <th>System size by population</th><th>Samples/day</th></tr> </thead> <tbody> <tr> <td><= 500</td><td>1</td></tr> <tr> <td>501 to 1000</td><td>2</td></tr> <tr> <td>1001 to 2500</td><td>3</td></tr> <tr> <td>2501 to 3300</td><td>4.)</td></tr> </tbody> </table> <p>Verify that any time the residual disinfectant concentration falls below 0.2 mg/L in a system using grab sampling, the system takes a grab sample every 4 h until the residual disinfectant concentration is equal to or greater then 0.2 mg/L. (10)(15)(16)</p> <p>Verify that the residual disinfectant concentration is measured at least at the same points in the distribution system and at the same time as total coliforms are sampled. (10)(15)(16)</p> <p>...</p> | System size by population | Samples/day | <= 500 | 1 | 501 to 1000 | 2 | 1001 to 2500 | 3 | 2501 to 3300 | 4.) |
| System size by population | Samples/day | | | | | | | | | | |
| <= 500 | 1 | | | | | | | | | | |
| 501 to 1000 | 2 | | | | | | | | | | |
| 1001 to 2500 | 3 | | | | | | | | | | |
| 2501 to 3300 | 4.) | | | | | | | | | | |
| <p>12-42. Facilities with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that is not required to provide filtration are required to provide disinfection treatment by 30 December 1991 (40 CFR 141.72(a)).</p> <p>...</p> | <p>Verify that the following requirements for disinfection are met: (10)(15)(16)</p> <ul style="list-style-type: none"> - it ensures 99.9 percent (3-log) inactivation of <i>Giardia Lamblia</i> cysts every day except for once per month by meeting the required CT applicable to the system's particular water quality parameters as outlined in 40 CFR 141.74 - it ensures 99.99 percent (4-log) inactivation of virus every day except for once per month by meeting the required CT applicable to the system's particular water quality parameters as outlined in 40 CFR 174 - the CT values are calculated daily as specified in 40 CFR 141.74(b)(3) - throughout the disinfection system there is either: <ul style="list-style-type: none"> - automatic startup and alarm for insuring continuous disinfection application while water is delivered through the distribution system - automatic shutoff when there is less than 0.2 mg/L residual disinfectant - the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h - the residual disinfectant concentration, measured as total chlorine, combine chlorine, or chlorine dioxide is not undetectable in more than 5 percent of samples each month for more than 2 consecutive months. <p>(NOTE: Water in a distribution system with a heterotrophic bacteria concentration less than or equal to 500 mL, measured as Heterotrophic Plate Count (HPC) is deemed to have a detectable disinfectant residual)</p> <p>...</p> | | | | | | | | | | |

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| <p>12-43. Facilities with public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that provide filtration or that are required by the state to install filtration must meet specific disinfection requirements by 29 June 1993 or within 18 mo or being required to install filtration (40 CFR 141.72(b) and 141.73).</p> <p style="text-align: center;">...</p> | <p>Determine if the facility provides filtration for drinking water. (10)(15)(16)</p> <p>Verify that, by 29 June 1993, the following requirements for disinfection are provided: (10)(15)(16)</p> <ul style="list-style-type: none"> - it ensures 99.9 percent (3-log) inactivation of <i>Giardia Lamblia</i> cysts - it ensures 99.99 percent (4-log) inactivation of viruses - the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h - the residual disinfectant concentration throughout the distribution system is not undetectable in more than 5 percent of samples each month for any 2 mo the system serves water to the public - analytical methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection. <p>(NOTE: Systems that filter are given an inactivation credit dependent on the type of filtration used.)</p> <p style="text-align: center;">...</p> |
| <p>12-44. Facilities with public water systems that use a surface water source and do not provide filtration are required to report specific information monthly to the state beginning 31 December 1990 (unless the state has determined that filtration is not required) until filtration is in place (40 CFR 141.75(a)).</p> <p style="text-align: center;">...</p> | <p>Verify that the following listed information is reported to the state at the indicated times: (10)(15)(16)</p> <ul style="list-style-type: none"> - source water quality information within 10 days after the end of each month the system serves water to the public - disinfection information within 10 days after the end of each month the system serves water to the public - a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal fiscal year (FY) - a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal FY - the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day - when turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day - any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day. <p>(NOTE: See the complete text of 141.75(a) for more details on how this information is to be reported.)</p> <p style="text-align: center;">...</p> |

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| <p>12-45. Facilities with public water systems that use a groundwater source under the direct influence of surface water and does not provide filtration treatment must report specific information to the state monthly starting 31 December 1990, or 6 mo after the state determines that the groundwater source is under the direct influence of surface water, whichever is later (40 CFR 141.75(a)).</p> | <p>Verify that the following listed information is reported to the state at the indicated times: (10)(15)(16)</p> <ul style="list-style-type: none"> - source water quality information within 10 days after the end of each month the system serves water to the public - disinfection information within 10 days after the end of each month the system serves water to the public - a report summarizing compliance with all watershed control programs no later than 10 days after the end of each Federal FY - a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the Federal FY - the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day - when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day - any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day. <p>(NOTE: See the complete text of 141.75(a) for more details on how this information is to be reported.)</p> |
| <p>12-46. Facilities with public water systems that use a surface water source or a groundwater source under the direct influence of surface water that provide filtration must report specific information monthly to the state starting 29 June 1993 or when filtration is installed, whichever is later (40 CFR 141.75(b)).</p> | <p>Verify that by 29 June 1993, or whenever filtration is installed, the following information is provided to the state in the indicated time frame: (10)(15)(16)</p> <ul style="list-style-type: none"> - turbidity measurements within 10 days after the end of each month the system serves water to the public - disinfection information within 10 days after the end of each month the system serves water to the public - notice of an occurrence of a waterborne disease outbreak, as soon as possible but no later than by the end of the next business day - when the turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day - any time the residual falls below 0.2 mg/L in the water entering the distribution system, as soon as possible, but no later than by the end of business the next day. <p>(NOTE: See the complete text of 141.75(b) for more details on how this information is to be reported.)</p> |
| <p>12-47. The USEPA has set certain standards for analytic procedures that must be used and followed to demonstrate compliance with disinfection and filtration requirements (40 CFR 141.74).</p> | <p>Verify that analytic methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection. (10)(15)(16)</p> |

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| <p>Notification and Reporting Requirements</p> <p>12-48. Public water systems are required to maintain on the premises, or at a convenient location specific records (40 CFR 141.33(a), 141.33(b), and 141.33(d)).</p> <p>12-49. When Primary Drinking Water Standards are exceeded, public notifications must be made (40 CFR 141.32).</p> | <p>Verify that records of bacteriological analyses are kept for a minimum of 5 yr. (10)(15)(16)</p> <p>Verify that records of chemical analyses are kept for a minimum of 10 yr. (10)(15)(16)</p> <p>Verify that records of actions taken to correct violations of primary drinking water regulations are kept for a minimum of 3 yr after the last action taken for a particular violation. (10)(15)(16)</p> <p>Verify that records concerning a variance or exemption granted to the system are kept for a period ending not less than 5 yr following the expiration of the variance or exemption. (10)(15)(16)</p> <p>Verify that if there was an excess, the following public notification procedures were followed: (10)(15)(16)</p> <ul style="list-style-type: none"> - notices were placed in a daily newspaper of general circulation in the area served by the system as soon as possible, but no later than 14 days after the violation or failure - notices were placed in a weekly newspaper of general circulation if there is no daily newspaper - notices were issued by mail delivery, by direct mail or with the water bill, or by hand delivery within 45 days after the violation or failure. <p>(NOTE: The state may waive mail or hand delivery if it is determined that the violation or failure is corrected within the 45-day period.)</p> <p>Verify that if it was an acute violation, the public radio and television stations were notified. (10)(15)(16)</p> <p>Verify that if public notification was made, it was made according to USEPA guidelines. (10)(15)(16)</p> <p>Verify that following the initial notice, additional notice is given at least once every 3 mo by mail delivery, or by hand delivery, for as long as the violation exists. (10)(15)(16)</p> <p>(NOTE: Instead of the requirements outlined here, community water systems in an area not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice must be given within 72 h for acute violations and 14 days for other violations.)</p> |

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| <p>12-50. Community water systems that exceed the secondary MCL of 2.0 mg/L for fluoride but not the MCL of 4.0 mg/L are required to notify specific individuals (40 CFR 143.5).</p> <p style="text-align: center;">...</p> | <p>Verify that notice has been provided to the following: (10)(15)(16)</p> <ul style="list-style-type: none"> - all billing units annually - all new billing units at the time service begins - the state public health officer. <p>(NOTE: A copy of the required text of the notice is found in 40 CFR 243.5(b).)</p> <p style="text-align: center;">...</p> |
| <p>12-51. Facilities that operate public water systems must send reports to the state on any failure to comply with applicable biological, turbidity, radioactivity and chemical standards, and on any failure to comply with monitoring requirements that apply (40 CFR 141.31).</p> <p style="text-align: center;">...</p> | <p>Verify that, in general, reports are sent within the first ten days following the month in which the result is received, or the first ten days following the end of the required monitoring period, whenever standards are not met. (10)(15)(16)</p> <p>Verify that the facility reported failure to comply with any national primary drinking water regulations to the state within 48 h. (10)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>Lead and Copper in Drinking Water Systems</p> <p>12-52. The use of pipe, solder, or flux that contains lead is not allowed in specific situations (40 CFR 141.43(a)(1) and 141.43(d)).</p> <p>...</p> <p>12-53. Community waters systems and each nontransient, noncommunity water systems were required to issue a notice by 19 June 1988 to persons served by the system who might be affected by lead contamination (40 CFR 141.34 and 141.43(a)(2)).</p> <p>...</p> | <p>Verify that lead pipe, solder, or flux is not used in the installation or repair of either of the following: (10)(15)(16)</p> <ul style="list-style-type: none"> - any public water system - any plumbing in a residential facility providing water for human consumption, which is connected to a public water system. <p>(NOTE: This does not apply to leaded joints necessary for the repair of cast iron pipes.)</p> <p>(NOTE: Lead-free is defined as not more than 0.2 percent content for solders and flux and not more than 8.0 percent lead in reference to pipes and pipe fittings.)</p> <p>...</p> <p>Verify that the notice was issued by one of the following methods: (10)(15)(16)</p> <ul style="list-style-type: none"> - three newspaper notices - a notice included with the water bill - a hand delivered notice. <p>(NOTE: For nontransient, noncommunity water systems, notice may be given by continuous posting.)</p> <p>(NOTE: The notice is not required if the system can demonstrate to the state that the water system, including the nonresidential and residential portion connected to the water system, are lead free.)</p> <p>(NOTE: Notice must be provided even if there is no violation of the national primary drinking water standards. The required wording of the notice is outlined in 40 CFR 141.34.)</p> <p>...</p> |

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| <p>12-54. Facilities with community or nontransient, noncommunity water systems must notify their users about lead in drinking water systems (40 CFR 141.85 and 141.91(f)).</p> | <p>Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples: (10)(15)(16)</p> <ul style="list-style-type: none"> - the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population - within 60 days after exceeding the lead action level: <ul style="list-style-type: none"> - notices are inserted in each customer's water utility bill - information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community - pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers - public service announcements are submitted to at least five of the radio and television stations broadcasting to the community. <p>Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level. (10)(15)(16)</p> <p>Verify that a nontransient, noncommunity water system delivers the public education materials by posting informational posters and distributing brochures. (10)(15)(16)</p> <p>Verify that a nontransient, noncommunity water system repeats distribution of information at least once each calendar year in which the system exceeds the lead action level. (10)(15)(16)</p> <p>(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)</p> <p>Verify that, by 31 December, any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded. (10)(15)(16)</p> |

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| <p>12-55. Community water systems and non-transient, noncommunity water systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1), 141.80(c), 141.80(e), 141.86(b), and 141.90(e)).</p> | <p>Verify that the concentration of lead does not exceed 0.015 mg/L in more than 10 percent of tap water samples collected during any monitoring period. (10)(15)(16)</p> <p>Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period. (10)(15)(16)</p> |
| <p>12-56. All water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d)).</p> | <p>Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards. (10)(15)(16)</p> <p>(NOTE: Please see 40 CFR 181 and 40 CFR 183 for design details for corrosion control systems in relationship to the size of the water system.)</p> |
| <p>12-57. Systems that exceed the lead or copper action level are required to implement applicable source water treatment standards (141.80(e) and 141.83).</p> | <p>Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action rate. (10)(15)(16)</p> <p>Verify that if the state requires the installation of source water treatment, the installation is done within 24 mo after the states initial response. (10)(15)(16)</p> <p>Verify that follow-up tap water monitoring and source water monitoring is completed within 36 mo after the state's initial response. (10)(15)(16)</p> |
| <p>12-58. Facilities with water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).</p> | <p>Verify that lead service line replacement is done according to the schedules and parameters outlined in 40 CFR 141.84. (10)(15)(16)</p> <p>(NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than 0.015 mg/L.)</p> <p>(NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods, and the system submits the results to the state.)</p> |

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| <p>12-59. Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites, according to the chart in Appendix 12-7 (40 CFR 141.80(g), 141.86(a)(1), 141.86(c), and 141.86(d)).</p> | <p>Verify that sample sites have been selected and sampling started as of the dates indicated in Appendix 12-7. (10)(15)(16)</p> <p>Verify that monitoring is done according to the schedules outlined in 141.86 and as required by the state. (10)(15)(16)</p> <p>Verify that the procedures for sampling and granting of variances found in 141.86 are followed. (10)(15)(16)</p> <p>Verify that for the initial tap sample, all large water systems monitor during two consecutive 6-mo periods and all small and medium size water systems monitor during each 6-mo period until: (10)(15)(16)</p> <ul style="list-style-type: none"> - the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment - the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods. <p>(NOTE: A small or medium size water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.)</p> <p>Verify that for monitoring after the installation of corrosion control and source water treatment, large systems with optimal corrosion control by 1 January 1997 monitor during two consecutive 6-mo periods by 1 January 1988. (10)(15)(16)</p> <p>Verify that for monitoring after the installation of corrosion control and source water treatment, small or medium size systems that install optimal corrosion control within 24 mo after being required to do so by the state, monitor during two consecutive 6 mo periods within 36 mo after being required to install optimal corrosion control treatment. (10)(15)(16)</p> <p>Verify that for monitoring after the installation of corrosion control and source water treatment required by the state, all systems which install state required systems monitor during 2 consecutive months within 36 mo after the initial state requirement. (10)(15)(16)</p> <p>Verify that after the state has specified water quality parameter values for optimal corrosion control, monitoring is done during each subsequent 6-mo monitoring period beginning when the state specified the optimal values. (10)(15)(16)</p> |

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| <p>12-60. All large water systems and all small and medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper (40 CFR 141.40(h) and 141.87).</p> <p style="text-align: center;">...</p> | <p>Verify that monitoring for water quality parameters is done according to Appendix 12-8. (10)(15)(16)</p> <p style="text-align: center;">...</p> |
| <p>12-61. Water systems that fail to meet the lead or copper action levels are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).</p> <p style="text-align: center;">...</p> | <p>Verify that systems which exceed lead or copper action levels at the tap collect one source water sample from each entry point to the distribution system within 6 mo after the exceedance. (10)(15)(16)</p> <p>Verify that systems which install source water treatment as required by the state collect an additional source water sample from each entry point to the distribution system during two consecutive 6-mo monitoring periods. (10)(15)(16)</p> <p>Verify that the system monitors as follows when the state specifies maximum permissible source water levels: (10)(15)(16)</p> <ul style="list-style-type: none"> - once during the 3-yr compliance period for water systems using only groundwater - annually for water systems using surface water or a combination of surface and groundwater. <p>(NOTE: Frequency of monitoring may be reduced by the state upon request.)</p> <p style="text-align: center;">...</p> |
| <p>12-62. In reference to lead and copper in water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90(a) and 141.90(b)).</p> <p style="text-align: center;">...</p> | <p>Verify that waste systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period. (10)(15)(16)</p> <p>Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period. (10)(15)(16)</p> <p style="text-align: center;">...</p> |

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| <p>12-63. All systems subject to the lead and copper requirements are required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).</p> | <p>Verify that records are kept onsite for 12 yr. (10)(15)(16)</p> |
| <p>SOLE SOURCE AQUIFER</p> <p>12-64. Projects that may affect the recharge zone or stream flow source zone of a designated sole source aquifer must be regulated (40 CFR 149.103 and 149.104).</p> | <p>(NOTE: Currently, the only Federally designated sole source aquifer is the Edwards Aquifer in the San Antonio, Texas area.)</p> <p>Determine if the facility is located near a designated sole source aquifer. (10)(13)(15)(16)</p> <p>Verify that the facility maintains a list of projects for which EISs will be prepared. (10)(13)(15)(16)</p> <p>Verify that if any projects may potentially cause direct or indirect contamination through their recharge zone, a petition has been submitted to the USEPA Regional Administrator. (10)(13)(15)(16)</p> |
| <p>RECREATIONAL WATERS</p> <p>12-65. Recreational potable water sources (such as hand-pumps) are considered to be noncommunity water systems and are required to meet specific monitoring requirements (ER 1130-2-407, para 5 and 6).</p> | <p>Verify that the following monitoring requirements for noncommunity water supplies are followed for facilities' potable water systems: (7)(10)(13)(15)(16)</p> <ul style="list-style-type: none"> - surface system: <ul style="list-style-type: none"> - bacteriological - quarterly - chemical (inorganic and nitrate only) - quarterly - physical turbidity - daily - ground system: <ul style="list-style-type: none"> - bacteriological - quarterly - chemical (inorganic and nitrate only) - quarterly. <p>(NOTE: If bacteriological or chemical components exceed allowable standards, more frequent testing may be required.)</p> |

DISTRICT: (5) Environment & Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

**COMPLIANCE CATEGORY:
WATER QUALITY MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|---|---|
| <p>12-66. Appropriate water quality must be maintained at beaches where people swim (ER 1110-2-400, para 6 and EM 1110-1-400, para 7-4).</p> <p>...</p> <p>12-67. Facilities that own or operate swimming pools must maintain and monitor water quality (TM 5-662).</p> <p>...</p> | <p>Verify that tests of water samples meet health requirements. (7)(10)(13)(15)(16)</p> <p>Verify that prevention strategies (such as proper gradient, landscaping, and beach nourishment) are utilized to prevent erosion from effecting water quality. (6)(7)(10)(13)(15)(16)</p> <p>Verify that design and preventive strategies do not allow sanitary waste-water discharges near the vicinity of the beach. (6)(7)(10)(13)(15)(16)</p> <p>...</p> <p>Verify that swimming pools are disinfected according to guidelines set forth in TM 5-660. (15)(16)</p> <p>Verify that daily samples are taken and recorded in an operating log (DA Form 3164-R). (15)(16)</p> <p>Verify that the following levels have not been exceeded during any 30-day period: (5)(15)(16)</p> <ul style="list-style-type: none"> - not more than 15 percent of samples examined contain more than 200 MPN bacteria/mL - not more than 15 percent of samples show positive for coliform in any of the five 10-mL portions. <p>...</p> |
| <p>EMERGENCY WATER SUPPLIES</p> <p>12-68. Facilities authorized to provide emergency supplies of clean drinking water to localities confronted with contaminated drinking water or to those areas that have been designated as drought-distressed must meet specific requirements (33 CFR 203.51 and 203.52).</p> | <p>Determine if written requests for Corps assistance have been: (10)(15)(16)</p> <ul style="list-style-type: none"> - signed by the Governor of the state in the case of contaminated drinking water - made by the Bureau of Indian Affairs for Indian tribal lands - made to the district or division commander in the case of drought-distress. <p>Verify that in case of contaminated water, Corps-supplied water is directed only toward provision of drinking-only water and that assistance is limited to 30 days or less, unless a formal agreement between state and Corps has been made. (10)(15)(16)</p> <p>Verify that Corps-supplied water is directed only toward provision of drinking-only water for contaminated water and as a supply of water for human and livestock consumption in case of drought-distress. (10)(15)(16)</p> |

DISTRICT: (5) Environmental Compliance Coordinator (ECC) (6) Natural Resources Management (7) Engineering (10) Operations (13) Planning **PROJECT:** (15) Project Resource Manager (16) Facility Managers (17) Lab Manager

Appendix 12-1

Primary Drinking Water Standards for Organic Contaminants

Table 1: MCLs Applicable to Community Water Systems (40 CFR 141.12)

| Contaminant | mg/L |
|---|------|
| Total Trihalomethanes (the sum of the concentrations of bromodichloromethane, di- bromochloromethane, tribromo- methane (bromoform) and tri- chloromethane (chloroform)) | 0.10 |

(NOTE: The standard for total trihalomethanes only applies to community water systems serving greater than 10,000 individuals which add a disinfectant during treatment.)

Table 2: MCLs Applicable to Community and Nontransient, Noncommunity Water Systems (40 CFR 141.61(a))

| Contaminant | mg/L |
|----------------------------|--------|
| 1,1-Dichloroethylene | 0.007 |
| 1,1,1-Trichloroethane | 0.20 |
| 1,2-Dichloroethane | 0.005 |
| 1,2-Dichloropropane | 0.005 |
| Benzene | 0.005 |
| Carbon Tetra chloride | 0.005 |
| cis-1,2-Dichloroethylene | 0.07 |
| Ethylbenzene | 0.7 |
| Monochlorobenzene | 0.1 |
| 0-Dichlorobenzene | 0.6 |
| para-Dichlorobenzene | 0.075 |
| Styrene | 0.1 |
| Tetrachloroethylene | 0.005 |
| Toluene | 1.0 |
| trans-1,2-Dichloroethylene | 0.1 |
| Trichloroethylene | 0.005 |
| Vinyl chloride | 0.002 |
| Xylenes (total) | 10.0 |
| Dichloromethane | 0.005* |
| 1,2,4-Trichlorobenzene | .07* |
| 1,1,2-Trichloroethane | .005* |

* The effective date for these MCLs is 17 January 1994

Appendix 12-1 (continued)

Table 3: MCLs For Synthetic Organic Contaminants Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems (40 CFR 141.61(c))

| Contaminant | mg/L |
|----------------------------|---------|
| Alachlor | 0.002 |
| Aldicarb | 0.003** |
| Aldicarb sulfoxide | 0.004** |
| Aldicarb sulfone | 0.003** |
| Atrazine | 0.003 |
| Carbofuran | 0.04 |
| Chlordane | 0.002 |
| Dibromochloropropane | 0.0002 |
| 2,4-D | 0.07 |
| Ethylene dibromide | 0.00005 |
| Heptachlor | 0.0004 |
| Heptachlor epoxide | 0.0002 |
| Lindane | 0.0002 |
| Methoxychlor | 0.04 |
| Pentachlorophenol | 0.001 |
| Polychlorinated biphenyls | 0.0005 |
| Toxaphene | 0.003 |
| 2,4,5-TP | 0.05 |
| Benzo(a)pyrene | 0.0002* |
| Delapon | 0.2* |
| Di(2-ethylhexyl) adipate | 0.4* |
| Di(2-ethylhexyl) phthalate | 0.006* |
| Dinoseb | 0.007* |
| Diquat | 0.02* |
| Endothall | 0.1* |
| Endrin | 0.002* |
| Glyphosate | 0.7* |
| Hexachlorobenzene | 0.001* |
| Hexachlorocyclopentadiene | 0.05* |
| Oxamyl (Vydate) | 0.2* |
| Picloram | 0.5* |
| Simazin | 0.004* |
| 2,3,7,8,-TCDD (Dioxin) | 3 x 10* |

* The effective date for these MCLs is 17 January 1994.

** The MCLs for these substances have been postponed by the USEPA.

Appendix 12-2

Primary Drinking Water Standards for Inorganic Contaminants

Table 1: MCLs Applicable to Community Water Systems (40 CFR 141.11, 141.12(c) and 141.62(b)(1))

| Contaminant | mg/L |
|-----------------------|--------|
| Arsenic | 0.05 |
| Fluoride | 4.0 |
| Total Trihalomethanes | 0.10 * |

* This MCL only applies to community water systems which serve a population of 10,000 individuals or more and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process.

Table 2: MCLs Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems (40 CFR 141.62(b)(2) through 141.62(b)(6) and 141.62(b)(10) through 141.62(b)(15))

| Contaminant | mg/L |
|---------------------------|-------------------------|
| Asbestos | 7 million fibers /liter |
| Barium | 2.0 |
| Cadmium | 0.005 |
| Chromium | 0.1 |
| Mercury | 0.002 |
| Selenium | 0.05 |
| Antimony | 0.006 |
| Beryllium | 0.004 |
| Cyanide (as free Cyanide) | 0.2 |
| Nickel | 0.1 |
| Thallium | 0.002 |

Table 3: MCLs Applicable to Community, Nontransient, Noncommunity and Transient Noncommunity Water Systems (40 CFR 141.62(b)(7) through 141.62(b)(9))

| Contaminant | mg/L |
|----------------------------------|------|
| Nitrate (as N) | 10.0 |
| Nitrite (as N) | 1.0 |
| Total Nitrate and Nitrite (as N) | 10.0 |

Appendix 12-3

Detection Limitations for Inorganic Contaminants (40 CFR 141.23(a))

| Contaminant | MCL (mg/L) | Analytical Method | Detection Limit (mg/L) |
|-------------|----------------------------|--|----------------------------|
| Antimony | 0.005 | Atomic Absorption Furnace | 0.003 |
| | | ICP Mass spectrometry | 0.0008 ^a |
| | | Hydride Atomic Absorption | 0.0004 |
| | | | 0.001 |
| Asbestos | 7 million fibers per liter | Transmission Electron Microscopy | 0.01 million fibers/liter |
| Barium | 2.0 | Atomic Absorption; furnace technique | 0.002 |
| | | Atomic Absorption; direct aspiration | 0.1 |
| | | Inductively Coupled Plasma | 0.002 (0.001) ¹ |
| Cadmium | 0.005 | Atomic Absorption; furnace technique | 0.0001 |
| | | Inductively Coupled Plasma | 0.001 ¹ |
| Chromium | 0.1 | Atomic Absorption; furnace technique | 0.001 |
| | | Inductively Coupled Plasma | 0.007 |
| | | (0.001) ^a | |
| Cyanide | 0.2 | Distillation, Spectrophotometric ⁴ | 0.02 |
| | | Distillation, Automated, Spectrophotometric ⁴ | |
| | | Distillation, Selective Electrode ⁴ | 0.05 |
| | | Distillation, Amenable, Spectrophotometric ⁵ | 0.02 |
| Mercury | 0.002 | Manual Cold Vapor Technique | 0.0002 |
| | | Automated Cold Vapor Technique | 0.0002 |
| Nickel | 0.1 | Atomic Absorption, Furnace | 0.001 |
| | | | 0.0006 ^a |
| | | Inductively Coupled Plasma ¹ | 0.005 |
| | | ICP Mass Spectrometry | 0.0005 |
| | | | |
| | | | |
| Nitrate | 10 as N | Manual Cadmium Reduction | 0.01 |
| | | Automated Hydrazine Reduction | 0.01 |
| | | Automated Cadmium Reduction | 0.05 |
| | | Ion Selective Electrode | 1.0 |
| | | Ion Chromatography | 0.01 |
| Nitrite | 1 as N | Spectrophotometric | 0.01 |
| | | Automated Cadmium Reduction | 0.05 |
| | | Manual Cadmium Reduction | 0.01 |
| | | Ion Chromatography | 0.004 |
| Selenium | 0.05 | Atomic Absorption; furnace | 0.002 |
| | | Atomic Absorption, gaseous hydride | 0.002 |

Appendix 12-3 (continued)

| Contaminant | MCL (mg/L) | Analytical Method | Detection Limit (mg/L) |
|-------------|------------|---------------------------|-------------------------------|
| Thallium | 0.002 | Atomic Absorption Furnace | 0.001 |
| | | ICP-Mass Spectrometry | 0.0007 ⁶ 0.0003 |

¹ Using concentration techniques in Appendix A to USEPA Method 200.7

³ Using a 2x preconcentration step as noted in Method 200.7, lower Minimum Detection Limits (MDLs) may be achieved by using a 4x preconcentration

⁴ Screening method for total cyanides

⁵ Measures "free" cyanides

⁶ Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption

Appendix 12-4

Detection Limitations (40 CFR 141.24(h)(18))

| Contaminant | Detection Limit |
|-----------------------------|-----------------|
| Alachlor | 0.0002 |
| Aldicarb | 0.0005 |
| Aldicarb sulfoxide | 0.0005 |
| Aldicarb sulfone | 0.0008 |
| Atrazine | 0.0001 |
| Benzo[a]pyrene | 0.00002 |
| Carbofuran | 0.0009 |
| Chlordane | 0.0002 |
| Dalapon | 0.001 |
| Dibromochloropropane (DBCP) | 0.00002 |
| Di (2-ethylhexyl) adipate | 0.0006 |
| Di (2-ethylhexyl) phthalate | 0.0006 |
| Dinoseb | 0.0002 |
| Diquat | 0.0004 |
| 2,4-D | 0.0001 |
| Endothall | 0.009 |
| Endrin | 0.00001 |
| Ethylene dibromide (EDB) | 0.00001 |
| Heptachlor | 0.00004 |
| Heptachlor epoxide | 0.00002 |
| Hexachlorobenzene | 0.0001 |
| Hexachlorocyclopentadiene | 0.0001 |
| Lindane | 0.00002 |
| Methoxychlor | 0.0001 |
| Oxamyl | 0.002 |
| Picloram | 0.0001 |
| Pentachlorophenol | 0.00004 |
| Polychlorinated biphenyls | 0.0001 |
| Simazine | 0.00007 |
| Toxaphene | 0.001 |
| 1,3,7,8-TCDD (Dioxin) | 0.000000005 |
| 2,4,5-TP | 0.0002 |

Appendix 12-5

Unregulated Organic and Inorganic Contaminants (40 CFR 141.40(n)(11) and 141.40(n)(12))

Organic Contaminants

Aldrin
Butachlor
Carbaryl
Dicamba
Dieldrin
3-Hydroxycarbofuran
Methomyl
Metolachlor
Metribuzin
Propachlor

Inorganic Contaminants

Sulfate

Appendix 12-6

Coliform Bacteria Sampling Frequency (40 CFR 141.21(a)(2))

| Population Served Per Month | Minimum Number of Samples Per Month |
|--------------------------------|--|
| 25 to 1000 | 1 |
| 1001 to 2500 | 2 |
| 2501 to 3300 | 3 |
| 3301 to 4100 | 4 |
| 4101 to 4900 | 5 |
| 4901 to 5800 | 6 |
| 5801 to 6700 | 7 |
| 6701 to 7600 | 8 |
| 7601 to 8500 | 9 |
| 8501 to 12,900 | 10 |
| 12,901 to 17,200 | 15 |
| 17,201 to 21,500 | 20 |
| 21,501 to 25,000 | 25 |
| 25,001 to 33,000 | 30 |
| 33,001 to 41,000 | 40 |
| 41,001 to 50,000 | 50 |
| 50,001 to 59,000 | 60 |
| 59,001 to 70,000 | 70 |
| 70,001 to 83,000 | 80 |
| 83,001 to 96,000 | 90 |
| 96,001 to 130,000 | 100 |
| 130,001 to 220,000 | 120 |
| 220,001 to 320,000 | 150 |
| 320,001 to 450,000 | 180 |
| 450,001 to 600,000 | 210 |
| 600,001 to 780,000 | 240 |
| 780,001 to 970,000 | 270 |
| 970,001 to 1,230,000 | 300 |
| 1,230,001 to 1,520,000 | 330 |
| 1,520,001 to 1,850,000 | 360 |
| 1,850,001 to 2,270,000 | 390 |
| 2,270,001 to 3,020,000 | 420 |
| 3,020,001 to 3,960,000 | 450 |
| 3,960,001 or more | 480 |

Appendix 12-7

Monitoring and Sampling Parameters for Lead and Copper in Drinking Water (40 CFR 141.86(c) and 141.86(d))

Number of Sampling Sites Required

| System Size (people served) | No. of sites (standard monitoring) | No. of sites (reduced monitoring) |
|--------------------------------|---------------------------------------|--------------------------------------|
| > 100,000 | 100 | 50 |
| 10,001 - 100,000 | 60 | 30 |
| 3301 - 10,000 | 40 | 20 |
| 501 - 3300 | 20 | 10 |
| 101 - 500 | 10 | 5 |
| < / = 100 | 5 | 5 |

Dates for the Start of Monitoring

| System Size (no. people served) | First 6-mo monitoring period begins on: |
|------------------------------------|--|
| > 50,000 | 1 January 1992 |
| 3301 - 50,000 | 1 July 1992 |
| < / = 3300 | 1 July 1993 |

Appendix 12-8

Monitoring Requirements for Water Quality Parameters (40 CFR 141.87)

(NOTE: This table is for illustrative purposes; consult the text of the regulation for actual details.)

| Monitoring Period | Parameters ¹ | Location | Frequency |
|--|---|---|------------|
| Initial Monitoring | pH, alkalinity, orthophosphate or silica ² , calcium, conductivity, temperature | Taps and at entry points in distribution system | Every 6 mo |
| After Installation of Corrosion Control | pH, alkalinity, orthophosphate, or silica ² , calcium ³ , conductivity, temperature | Taps | Every 6 mo |
| | pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual ⁴ | Entry points to distribution system. | Biweekly |
| After State Specifies Parameter Values For Optimal Corrosion Control | pH, alkalinity, orthophosphate, or silica ² , calcium ³ | Taps | Every 6 mo |
| | pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual ⁴ | Entry points to distribution system. | Biweekly |

Appendix 12-8 (continued)

| Monitoring Period | Parameters¹ | Location | Frequency |
|--------------------------|---|--------------------------------------|---|
| Reduced Monitoring | pH, alkalinity, orthophosphate or silica ² calcium ³ | Taps | Every 6 mo at a reduced number of sites |
| | pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual ⁴ | Entry points to distribution system. | Biweekly |

1. Small and medium size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.
2. Orthophosphates must be measured only when an inhibitor containing a phosphate component is used. Silica must be measured only when an inhibitor containing silicate compounds is used.
3. Calcium must be measured only when calcium carbonate stabilization is used as a part of corrosion control.
4. Inhibitor dosage rates and inhibitor residual concentrations (orthophosphates or silica) must be measured only when an inhibitor is used.

Section 13

Floating Plant Management

SECTION 13

FLOATING PLANT MANAGEMENT

A. Applicability

This section has been developed to address the unique environmental concerns of floating plant. These concerns include issues relating to hazardous waste management, petroleum, oil, and lubricant (POL) management, solid waste management, and wastewater management. Safety issues, such as how many life jackets are required on a floating plant, and structural issues, such as hull thickness, are not addressed in this section.

Although this section addresses requirements unique to floating plant, the assessor must also review the other sections of the manual for generally applicable requirements.

Types of floating plant covered include: dredges, mat sinking units, tugs, towboats, quarterboats, survey boats, snag boats, crewboats and barges (including tank, cargo, hopper and crane barges), and other Corps vessels. Requirements specific only to ocean-going vessels are not addressed in this section.

B. Federal Legislation

- *The Oil Pollution Act of 1990.* This law, Public Law (PL) 301-308 (33 U.S. Code (USC) 2701-2761, et. al.), as amended, requires the prevention of oil pollution into navigable waters by tank vessels. This includes the preparation of a response plan, construction of oil carriers with double hulls, and inspection of spill response equipment.
- *The Federal Facilities Compliance Act (FFCA) of 1992.* This Act provides for a waiver of sovereign immunity with respect to Federal, state, and local procedural and substantive requirements relating to the *Resource Conservation and Recovery Act (RCRA)*. Additionally, it defines hazardous waste in relation to public vessels.

C. State/Local Requirements

- States and/or local governments may also regulate issues that impact floating plant. These issues include environmental noise impact restrictions, spill cleanup requirements, hazardous waste and solid waste disposal requirements, and incinerator operation restrictions.

D. Engineer Regulations (ERs) and Department of Defense (DOD) Regulations

- Engineering Manual (EM) 385-1-1, *Safety and Health Requirements*. Although this is a manual and not an ER, the contents apply to all missions under the command of the Chief of Engineers, whether accomplished by military, civilian, or contractor forces.
- ER 1125-2-302, *Marine Sanitation Devices and Auxiliary Environmental Equipment*. This regulation outlines the policies and procedures for design and operation of marine sanitation devices and auxiliary environmental equipment on Civil Works Revolving Fund and Project-owned floating plant.
- ER 1165-2-116, *Water Resources Policies and Authorities, Pollution Control at Civil Works Projects*. This regulation prescribes measures to be taken to prevent, control, and abate pollution of air, lands, and waters at Civil Works Projects. It requires cooperation with Federal, state, interstate, and local agencies in order to achieve this objective.

E. Key Compliance Requirements

- POL Management - POL must be managed in such a way that it does not enter the navigable waterways of the United States.
- Solid Waste - floating plant must not dispose of garbage overboard. Overseas discharge of plastic is specifically prohibited.
- Wastewater - all Corps of Engineers (COE) floating plant engaged in civil works activities in the navigable waters of the United States, except those vessels not equipped with installed toilet facilities, must be equipped with Coast Guard approved marine sanitation devices (MSDs).

F. Key Compliance Definitions

- *Accommodation, Control, or Service Spaces* - living quarters, including walkways, dining rooms, galleys, pantries, lounges, lavatories, cabins, staterooms,

offices, hospitals, cinemas, and game and hobby rooms; areas containing controls for equipment and navigation; workshops, other than those forming part of the machinery spaces; and store rooms adjacent to these spaces (46 CFR 147.3).

- *Accommodation Space* - for tankships this means any public space such as a hall, dining room, mess room, lounge, corridor, lavatory, cabin, office, hospital, cinema, game and hobby room, pantry that contains no cooking appliances, and a similar space open to the passengers and crew (46 CFR 10-10-2).
- *Barge* - any nonself-propelled vessel (46 CFR 90.10-3).
- *Cargo* - on tank vessels this means combustible liquid, flammable liquid, or liquified flammable gas unless otherwise stated (46 CFR 30.10-5).
- *Cargo Areas* - on tank vessels, that part of a vessel which includes the cargo tanks and other tanks into which cargo or cargo vapors are intentionally introduced; holds containing these tanks; all intervening spaces within, between, below, or outboard of these tanks or holds; and the deck areas over the length and beam of the vessel above these tanks, holds, or spaces (46 CFR 30.10-5a).
- *Cargo Control Stations* - on tank vessels means a location that is manned during cargo transfer operations for the purpose of directing or controlling the loading or unloading of cargo (46 CFR 30.10-5b).
- *Category A Machinery Space* - for a tank vessel this means any space and trunks and ducts to such a space that contains (46 CFR 30.10-6a):
 1. internal combustion machinery used for main propulsion
 2. internal combustion machinery used for purposes other than main propulsion where the total aggregate power is at least 500 brake horsepower
 3. internal combustion machinery that uses a fuel that has a flashpoint of less than 43.3 °C (110 °F), or
 4. one or more oil fired boilers or oil fuel units.
- *Certificated* - for tank vessels this applies to a vessel covered by a certificate of inspection issued by the Coast Guard; when applied to personnel employed on tank vessels, the term refers to a certificate of ability issued by the Coast Guard (46 CFR 30.10-7).
- *Coastwise* - this includes all tank vessels and vessels normally navigating the waters of any ocean or the Gulf of Mexico at 20 nautical miles [37.04 km] or less offshore (46 CFR 30.10-9 and 90.10-11).

- *Cofferdam* - a void or empty space separating two or more compartments for the purpose of isolation or to prevent the contents of one compartment from entering another compartment in the event of the failure of the walls of one to retain their tightness (46 CFR 30.10-13).
- *Combustible Liquid* - for tank vessels this means any liquid having a flashpoint above 80 °F [26.67 °C] and include (46 CFR 30.10-15):
 1. Grade D, which is any combustible liquid with a flashpoint below 150 °F [65.56 °C] and above 80 °F [26.67 °C]
 2. Grade E which is any combustible liquid with a flashpoint of 150 °F [65.56 °C] or above.
- *Control Space* - an enclosed space in which is located a ship's radio, main navigating equipment, or emergency source of power, or in which is located centralized fire recording or fire control equipment, but not including firefighting apparatus that must be located in the cargo area or individual pieces of firefighting equipment (46 CFR 30.10-19a).
- *Discharge* - any release, however caused, from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting, or emptying (33 CFR 151.05).
- *Domestic Wastes* - all types of wastes generated in the living spaces on board a ship except victual wastes (33 CFR 151.05).
- *Drums, Barrels, or other packages* - this is interpreted to mean portable tanks having a maximum capacity of 110 gal [378.54 L] and Department of Transportation (DOT) specification cylinders having a water capacity of not more 1000 lb [453.59 kg] which are actually loaded and discharged from vessels with their content intact (46 CFR 30.01-20(a) and 90.05-30).
- *Flammable Liquid* - any liquid which gives off flammable vapors at or below a temperature of 80 °F [26.67 °C] (46 CFR 30.10-22).
- *Flame Arrester* - any device or assembly of a cellular, tubular, pressure, or other type used for preventing the passage of flames into an enclosed space (46 CFR 30.10-23).
- *Floating Plant* - includes marine vessels used to transport personnel, work boats, floating cranes and derricks, barges, patrol boats, etc. (EM 385-1-1, Sect 19 Definitions).

- *Garbage* - all kinds of victual, domestic, and operational waste, excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically, except dishwater, graywater, and those substances that are defined or listed in other Annexes to MARPOL 73/78 (33 CFR 151.05).
- *Graywater* - drainage from the dishwasher, shower, laundry, bath, and washbasin drains, and does not include drainage from toilets, urinals, hospitals, and cargo spaces (33 CFR 151.05).
- *IM 101 or 102 Portable Tank* - a portable tank constructed in accordance with 49 CFR 178.270 through 178.272 and approved under 73.32a (46 CFR 98.30-1(a)).
- *Industrial Vessel* - every vessel which, by reason of its special outfit, purpose, and design for function, engages in certain industrial ventures. Included in this classification are such vessels as drill rigs, missile range ships, dredges, cable layers, derrick barges, pipe lay barges, and construction and wrecking barges.
- *Inflammable or Combustible Liquid Cargo in Bulk* - this is interpreted on tank vessels to include such cargo in portable tanks of a capacity more than 110 U.S. gallons [416.40 L] (46 CFR 30.01-20(b)).
- *Inland Oil Barge* - a tank barge carrying oil in bulk as cargo certificated by the Coast Guard under 46 CFR chapter I, subchapter D for river or canal service or lakes, bays, and sounds service (33 CFR 155.200).
- *Keel Laying Date* - the date upon which progressive construction identifiable with a specific vessel begins, including construction of the first module or pre-fabricated section of the hull that is identifiable with that vessel (46 CFR 30.10-37).
- *Lightweight* - the displacement of a vessel in metric tons without cargo, oil fuel, lubricating oil, ballast water, fresh water, feedwater in tanks, consumable stores, and persons and their effects (46 CFR 30.10-38).
- *Liquefied Flammable Gas* - any flammable gas having a Reid vapor pressure exceeding 40 lb [18.14 kg], which has been liquefied (46 CFR 30.10-39).
- *Machinery Space* - any space that contains machinery and related equipment including Category A machinery spaces, propelling machinery, boilers, oil fuel units, steam and internal combustion engines, generators and centralized electrical machinery, oil filling stations, refrigeration stabilizing, ventilation, and air conditioning machinery, and similar spaces and trunks to such spaces (46 CFR 30.10-42).

- *Marine Portable Tank (MPT)* - a liquid-carrying tank that has a capacity of 110 gal [416.40 L] or more, is designed to be carried on a vessel, can be lifted full or empty onto and off a vessel, can be filled and discharged while on a vessel, is not permanently attached to the vessel, and was inspected by the Coast Guard on or before 30 September 1992 (46 CFR 64.5).
- *Marine Service Station* - that portion of a property where flammable or combustible liquids used as fuels are stored and dispensed from fixed equipment on shore, piers, wharves, or floating docks, into the fuel tanks of self-propelled craft, and shall include all facilities used in connection therewith (29 CFR 1910.106(a)(22)).
- *MARPOL 73/78* - the *International Convention for the Prevention of Pollution from Ships*, 1973 as amended by the Protocol of 1978 (33 CFR 151.05).
- *New Ship* - a ship:
 1. for which the building contract is placed after 31 December 1975, or
 2. in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction after 30 June 1976, or
 3. the delivery of which is after 31 December 1979, or
 4. that has undergone a major conversion:
 - a. for which the contract is placed after 31 December 1979, or
 - b. in the absence of a contract, the construction work of which is begun after 30 June 1975
 - c. that is completed after 31 December 1979.
- *Offshore Oil Barge* - a tank barge carrying oil in bulk as cargo, including dual-mode integrated tug-barges, certificated by the Coast Guard under 46 CFR chapter I, Subchapter D, for navigation in waters outside the Boundary Lines, as defined in 46 CFR 7, in any ocean or the Gulf of Mexico; any tank barge in Great Lakes service; or any foreign flag tank barge (33 CFR 155.200).
- *Oil* - petroleum in any form including crude oil, fuel oil, sludge, oil refuse, and refined products (33 CFR 151.05).
- *Oil Fuel* - oil used as a fuel for machinery in the vessel in which it is carried (46 CFR 30.10-48).
- *Oil Fuel Unit* - the equipment used for the preparation of oil fuel for delivery to an oil fired boiler, the equipment used for the preparation of heated oil fuel for delivery to an internal combustion engine, and any oil fuel pressure pumps, filler, and heater that deal with oil at a pressure of more than 1.8 kg/cm² (25 psig) (46 CFR 30.10-48a).

- *Oil Tanker* - a self-propelled vessel carrying oil in bulk as cargo, including integrated tug-barges designed for push-mode operation (33 CFR 155.200).
- *On-deck Spill* - a discharge of oil on the deck of a vessel during loading, unloading, transfer, or other shipboard operations. An on-deck spill could result from a leaking fitting, an overfill, a bad connection, or similar operational mishap. This is different from spills occurring as a result of a collision or grounding where the hull is punctured and a tank is ruptured, resulting in an uncontrolled discharge of oil into the marine environment (33 CFR 155.200).
- *Portable Tank* - see definitions for *IM 101 Portable Tank*, *IM 102 Portable Tank*, and *Marine Portable Tank*.
- *Pressure Vacuum Relief Valve* - any device or assembly of a mechanical, liquid, weight, or other type used for the automatic regulation of pressure or vacuum in enclosed spaces (46 CFR 30.10-55).
- *Service Space* - spaces that are used for galleys, pantries containing cooking appliances, lockers, storerooms, paint and lamp rooms and similar spaces that contain highly combustible materials, laundries, garbage and trash disposal and stowage rooms, workshops other than those forming part of the machinery spaces and similar spaces and trunks to such spaces (46 CFR 30.10-62a).
- *Ship* - a vessel of any type whatsoever, operating in the marine environment (33 CFR 151.05).
- *Ship's Stores* - materials which are on board a vessel for the upkeep, maintenance, safety, operation, or navigation of the vessel, or for the safety or comfort of the vessel's passengers or crew.
- *Tank Barge* - any tank vessel not equipped with means of self-propulsion (46 CFR 30.10-65).
- *Tankship* - any tank vessel propelled by power or sail (46 CFR 30.10-67).
- *Tank Vessel* - any vessel especially constructed or converted to carry liquid bulk cargo in tanks (46 CFR 30.10-69).
- *Vessel Carrying Oil As Secondary Cargo* - a vessel carrying oil pursuant to a permit issued under 46 CFR 30.01-1, 46 CFR 70.05-30, or 46 CFR 90.05-35 or pursuant to an International Oil Pollution Prevention (IOPP) or Noxious Liquid Substance (NLS) certificate; or any uninspected vessel that carries oil as bulk cargo (33 CFR 155.200).

FLOATING PLANT MANAGEMENT PROTOCOL

GUIDANCE FOR CHECKLIST USERS

REFER TO CHECKLIST ITEMS:

| | |
|-------------------------------------|---------------------|
| All Floating Plant | |
| General | 13-1 through 13-15 |
| Fuel/Transfer | |
| Operations | 13-16 through 13-18 |
| Solid Waste | 13-19 |
| Wastewater | 13-20 and 13-21 |
| Hazardous Materials | 13-22 through 13-24 |
| POL Management | 13-25 through 13-32 |
| Tank Vessels | |
| Hazardous Materials | 13-33 through 13-44 |
| POL Management | 13-45 through 13-47 |
| Cargo and Miscellaneous Vessels | |
| Hazardous Materials | 13-48 |
| POL Management | 13-49 and 13-50 |
| Public Vessels | |
| Hazardous Waste | 13-51 |

(NOTE: Office of Counsel should be considered a point of contact for all compliance requirements and violations.)

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action; C - In Compliance

FLOATING PLANT MANAGEMENT

Records to Review

- Ships Log
- Engine Room Log
- Oil Record Book
- Certificate of Inspection
- Classification Society Certificates
- Licenses, Documents, and Endorsements for Crew Members
- Vessel Response Plan
- Oil Transfer Procedures

Physical Features to Inspect

- Oil Transfer Locations (including lighting, communications, emergency shutdowns, and hose assemblies)
- MSDs
- Oil Waste Retention Facilities
- Waste Retention Facilities and Equipment
- Oily Water Separator
- Bilge Areas

People to Interview

- Operations (Division)
- Environmental Compliance Coordinator (ECC) (District)
- Engineering (District)
- Logistics (District)
- Operations (District)
- Facility Managers (Project)
- Captain
- Chief Engineer
- Galley Personnel
- Oil Transfer Personnel (Tankermen)

Comparison Chart

This chart indicates checklist item number equivalents between this manual and the manual edition prior to this. This chart does not indicate whether or not changes have been made in individual checklist items that still have the same number, it only indicates where checklist item numbers have changed.

| Checklist Item Numbers in the April 1993 ERGO Manual | Corresponding Checklist Item Numbers in the 1994 ERGO Manual |
|---|---|
| 13-1 through 13-46 | 13-1 through 13-3 |
| no match | 13-4 through 13-8 |
| 13-4 through 13-46 | 13-9 through 13-51 |

| | | | |
|---------------------------------|--|--------------|---------------------|
| PROJECT OR FACILITY: | COMPLIANCE CATEGORY: FLOATING PLANT MANAGEMENT USACE ERGO | DATE: | REVIEWER(S): |
| STATUS NA C RMA | REVIEWER COMMENTS: | | |
| | | | |

DEFINITIONS: NA - Not Applicable to the Facility; RMA - Requires Management Action. C - In Compliance

**COMPLIANCE CATEGORY:
FLOATING PLANT MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>ALL FLOATING PLANT</p> <p>General</p> <p>13-1. Determine actions or changes since previous environmental review of floating plant (GMP).</p> <p>...</p> <p>13-2. The facility should have access to a current file of applicable Federal, COE, and state/local regulations impacting floating plant (GMP).</p> <p>...</p> | <p>Read previous floating plant review to determine if noncompliance issues have been resolved.</p> <p>...</p> <p>Verify that a file of Federal and state regulations are maintained and kept current at the facility or at the district or division office:</p> <ul style="list-style-type: none"> - <i>Federal Facilities Compliance Act (FFCA), Section 106.</i> - <i>33 CFR 151, Vessels Carrying Oil, Noxious Liquid Substances, Garbage and Municipal or Commercial Waste.</i> - <i>33 CFR 154, Facilities Transferring Oil or Hazardous Material in Bulk.</i> - <i>33 CFR 155, Oil or Hazardous Materials Pollution Prevention Regulations for Vessels.</i> - <i>33 CFR 156, Oil and Hazardous Materials Transfer Operations.</i> - <i>46 CFR 30, Tank Vessels: General Provisions.</i> - <i>46 CFR 32, Tank Vessels: Special Equipment, Machinery and Hull Requirements.</i> - <i>46 CFR 34, Tank Vessels: Firefighting Equipment.</i> - <i>46 CFR 35, Tank Vessels: Operations.</i> - <i>46 CFR 38, Tank Vessels: Liquefied Flammable Gases.</i> - <i>46 CFR 64, Marine Portable Tanks and Cargo Handling Systems.</i> - <i>46 CFR 91, Cargo and Miscellaneous Vessels: Inspection and Certification.</i> - <i>46 CFR 92, Cargo and Miscellaneous Vessels: Construction and Arrangement.</i> - <i>46 CFR 97, Cargo and Miscellaneous Vessels: Operations.</i> - <i>46 CFR 98, Cargo and Miscellaneous Vessels: Special Construction, Arrangement and Other Provisions for Certain Dangerous Cargos in Bulk.</i> - <i>46 CFR 147, Hazardous Ships' Stores.</i> - <i>EM 385-1-1, Safety and Health Requirements Manual, October 1992.</i> - <i>ER 1125-2-302, Marine Sanitation Devices and Auxiliary Environmental Equipment, 31 July 1978.</i> - <i>ER 1165-2-116, Pollution Control at Civil Works Projects, 28 February 1968.</i> - <i>Appropriate state and local regulations.</i> <p>...</p> |

DISTRICT:

PROJECT:

**COMPLIANCE CATEGORY:
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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>13-3. Facilities are required to comply with state and local regulations (ER 1165-2-116, para 3).</p> | <p>Verify that the facility is complying with state and local requirements.</p> <p>Verify that the facility is operating according to permits issued by the state or local agencies.</p> <p>(NOTE: Issues typically regulated by state and local agencies include:</p> <ul style="list-style-type: none"> - spill management - handling of wastewater and fuel sludge from tank cleaning - use of product recovery systems - used oil - incinerator emissions - noise restrictions.) |
| <p>13-4. A fixed facility that is capable of transferring oil or hazardous material, in bulk, to or from a vessel with a capacity of 250 barrels (bbl) [10,500 gal] or more is required to have an Operations Manual (33 CFR 154.100(a) and 154.300 through 154.325).</p> | <p>Determine if the facility is capable of transferring oil or hazardous materials, in bulk, to or from a vessel with a capacity of 250 bbl [10,500 gal] or more.</p> <p>Verify that the facility has an Operations Manual that:</p> <ul style="list-style-type: none"> - describes how the facility is meeting applicable operating and equipment requirements - describes the responsibilities of personnel in conducting transfer operations - includes translations into a language or languages understood by all designated persons in charge of transfer operations employed by the facility. <p>Verify that the manual is current and readily available for examination by the Captain of the Port (COTP).</p> <p>Verify that a sufficient number of copies of the manual are readily available for facility personnel in charge while conducting a transfer operation.</p> <p>Verify that the manual contains the following specific information:</p> <ul style="list-style-type: none"> - the geographic location of the facility - a physical description of the facility including a plan of the facility showing mooring areas, transfer locations, control stations, and locations of safety equipment - the hours of operation |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>13-4. (continued)</p> | <ul style="list-style-type: none"> - the sizes, types, and number of vessels that the facility can transfer oil or hazardous materials to or from simultaneously - the following cargo information: <ul style="list-style-type: none"> - generic or chemical name - a description of the appearance of the cargo - the hazards involved in handling the cargo - instruction for safe handling - procedures to follow in the even of a spill or leak - a list of fire fighting procedures and extinguishing agents effective with fires involving the cargo - the minimum number of persons on duty during transfer operations - the names and telephone numbers of the facility, Coast Guard, and other personnel who may be called in an emergency - the duties of the watchman for unmanned vessels moored at the facility - a description of the required communication systems - the location and facilities of each personnel shelter - a description and instructions for for the use of drip and discharge collection and vessel slop reception facilities - a description and location of each emergency shutdown system - quantities, types, and locations of monitoring devices, fire extinguishing equipment, containment equipment - quantities, type, location, instruction for use, and time limits for gaining access to containment equipment - maximum relief valve settings. <p>Verify that the following procedures are outlined in the manual:</p> <ul style="list-style-type: none"> - transferring oil or hazardous materials - operating each loading arm - completion of pumping - emergencies - reporting and initial containment of oil or hazardous materials discharges. <p>Verify that the manual contains a brief summary of applicable Federal, state, and local oil or hazardous material pollution laws and regulations and a description of the training program for persons in charge.</p> <p>Verify that the manual has a letter of adequacy from the COTP.</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>13-5. Equipment used at a fixed facility that is capable of transferring oil or hazardous material, in bulk, to or from a vessel with a capacity of 250 bbl [10,500 gal] or more is required to meet specific standards in order to prevent environmental pollution (33 CFR 154.100(a) and 154.500 through 154.510).</p> <p style="text-align: center;">...</p> <p>13-6. A fixed facility that is capable of transferring oil or hazardous material, in bulk, to or from a vessel with a capacity of 250 bbl [10,500 gal] or more is required to have discharge containment equipment and means to remove spilled materials (33 CFR 154.100(a) and 154.530 through 154.550).</p> <p style="text-align: center;">...</p> | <p>Verify that each hose used to transfer fuel to a vessel that has a fill pipe for which containment can not practically be provided, is equipped with an automatic back pressure shutoff nozzle.</p> <p>Verify that each mechanical loading arm used for transferring oil or hazardous material has a means of being drained or closed before being disconnected after transfer operations are complete.</p> <p style="text-align: center;">...</p> <p>Verify that fixed catchments, curbing, or other fixed means are in place to contain oil or hazardous material discharge in at least:</p> <ul style="list-style-type: none"> - each hose connection manifold area - each hose handling and loading arm area (that area on that facility that is within the area traversed by the free end of the hose or loading arm when moved away from its normal stowed or idle position into a position for connection. <p>Verify that the fixed catchments, curbing or other fixed means have a capacity of at least:</p> <ul style="list-style-type: none"> - 2 bbl [84 gal] if it serves one or more hoses of 6 in. [15.24 cm] inside diameter or smaller, or loading arms of 6 in. [15.24 cm] nominal pipe size diameter or smaller - 3 bbl [126 gal] if it serves one or more hoses with an inside diameter of more than 6 in. [15.24 cm] but less than 12 in. [30.48 cm], or loading arms with nominal pipe size diameter of more than 6 in. but less than 12 in. [30.48 cm] - 4 bbl [168 gal] if it serves one or more hoses of 12 in. [30.48 cm] inside diameter or larger, or loading arms of 12 in. [30.48 cm] nominal pipe size diameter or larger. <p>(NOTE: The requirement for 2 bbl [84 gal] capacity may be met by using portable means of not less than 1/2 bbl [21 gal] capacity for part or all of the facility if the COTP has found that fixed means to contain oil or hazardous materials discharges are not feasible.)</p> <p>Verify that the facility has a means to safely and quickly remove discharged oil or hazardous material from the containment area without discharging the oil or hazardous material into the water.</p> <p>Verify that the facility has ready access to enough containment material and equipment to contain any oil or hazardous material discharged on the water from the operations of that facility.</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>13-7. As of 20 June 1994, inland oil barges must have appropriate equipment and supplies ready during transfer operations for immediate use to control and remove on-deck oil cargo spills of at least 1 bbl (33 CFR 155.215).</p> <p style="text-align: center;">...</p> | <p>Verify that the equipment consists of:</p> <ul style="list-style-type: none"> - sorbents - nonsparking hand scoops, shovels and buckets - containers suitable for holding recovered waste - emulsifiers for deck cleaning - protective clothing. <p>(NOTE: The oil barge owner or operator may rely on equipment available at the transfer facility receiving from or discharging to the barge if the use of the equipment has been prearranged by contract or other methods approved by the Coast Guard.)</p> <p style="text-align: center;">...</p> |
| <p>13-8. As of 20 June 1994 vessels carrying oil as secondary cargo are required to carry appropriate equipment and supplies for the containment and removal of on-deck oil cargo spills of at least 1/2 bbl (33 CFR 155.220).</p> <p style="text-align: center;">...</p> | <p>Verify that the equipment consists of:</p> <ul style="list-style-type: none"> - sorbents - nonsparking hand scoops, shovels and buckets - containers suitable for holding recovered waste - emulsifiers for deck cleaning - protective clothing. <p>Verify that the equipment is ready for immediate use during cargo transfer operations.</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>13-9. A tank vessel with a capacity of 250 or more barrels and an inland tank barge with the capacity of 250 or more barrels that is carrying oil or hazardous materials as cargo are required to meet specific requirements (33 CFR 155.100 and 155.310).</p> | <p>Determine if the facility has a tank vessel with a capacity of 250 or more bbl that carries oil or hazardous materials.</p> <p>Verify that the tank vessel meets the following:</p> <ul style="list-style-type: none"> - under or around each loading manifold and each transfer connection point, there is a fixed container or enclosed deck area that has a capacity of at least: <ul style="list-style-type: none"> - a 1/2 bbl [21 gal], if it serves one or more hoses with an inside diameter of 2 in. [5.08 cm] or less, or one or more loading arms with a nominal pipe size diameter of 2 in. [5.08 cm] or less - 1 bbl [42 gal], if it serves one or more hoses with an inside diameter of more than 2 in. [5.08 cm], but less than 4 in. [10.16 cm] or one or more loading arms with a nominal pipe size diameter of more than 2 in. [5.08 cm], but less than 4 in. [10.16 cm] - 2 bbl [84 gal], if it serves one or more hoses with an inside diameter of 4 in. [10.16 cm] or more, but less than 6 in. [15.24 cm], or one or more loading arms with a nominal pipe size diameter of 4 in. [10.16 cm] or more, but less than 6 in. [15.24 cm] - 3 bbl [126 gal], if it serves one or more hoses with an inside diameter of 6 in. [15.24 cm] or more, but less than 12 in. [30.48 cm], or one or more loading arms with a nominal pipe size diameter of 6 in. [15.24 cm] or more, but less than 12 in. [30.48 cm] - 4 bbl [168 gal], if it serves one or more hoses with an inside diameter of 12 in. [30.48 cm] or more, or one or more loading arms with a nominal pipe size diameter of 12 in. [30.48 cm] or more - there is a means of drainage or removing discharged oil or hazardous materials from each container or enclosed deck area without discharging oil or hazardous materials into the water - there is a mechanical means of closing each drain and scupper in the container or enclosed deck area. |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>13-9. (continued)</p> | <p>Verify that if the vessel does not meet the above criteria, it meets the following criteria:</p> <ul style="list-style-type: none"> - there is a coaming of at least 4 in. [10.16 cm] high, but not more than 8 in. [20.32 cm] high, enclosing the immediate area of the cargo hatches, loading manifolds, and transfer connections, that has a capacity, in all conditions, of at least a 1/2 bbl [21 gal] per hatch, manifold, and connection within the enclosed area - there is a fixed or portable container under each loading manifold and each transfer connection within the coaming that holds at least a 1/2 bbl [21 gal] - there is a mechanical means of closing each drain and scupper within the coaming - there is a means of draining or removing discharged oil or hazardous materials from the fixed or portable container and from within the coamings without discharging the oil or hazardous materials to the water. <p>(NOTE: These requirements apply to each ship that is operated under the authority of the United States, however, provisions for exemption of public vessels exist under certain circumstances.)</p> <p>Verify that by 21 January 1997 all oil tankers and offshore oil barges with a cargo capacity of 250 or more barrels have peripheral coamings, including port and starboard.</p> |
| <p>13-10. Ships of 300 gross tons [304,814.1 kg] or more that were constructed after 30 June 1974 are required to have a fixed container or enclosed deck area under or around each fuel oil or bulk lubricating oil tank vent, overflow, and fill pipe (33 CFR 155.100, 155.320(a), and 155.320 (c)).</p> | <p>Verify that ships of 300 gross tons [304,814.1 kg] or more, but less than 600 gross tons [609,628.2 kg] have fixed containers or enclosed decks with a capacity of at least a 1/2 bbl [21 gal]</p> <p>Verify that ships of 600 gross tons [609,628.2 kg] or more have fixed containers or enclosed decks with a capacity of at least 1 bbl [42 gal].</p> <p>(NOTE: These requirements apply to each ship that is operated under the authority of the United States, however, provisions for exemptions of public vessels exist under certain circumstances.)</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>13-11. Ships of 100 gross tons [101,604.7 kg] or more constructed before 1 July 1974, and ships of 100 gross tons [101,604.7 kg] or more, but less than 300 gross tons [304,814 kg] constructed after 30 June 1974 are required to meet specific standards for discharge containment (33 CFR 155.100, 155.320(b), and 155.320 (c)).</p> <p style="text-align: center;">...</p> | <p>Verify that one of the following criteria is met:</p> <ul style="list-style-type: none"> - there are fixed containers or enclosed deck areas under or around each issue oil or bulk lubricating oil tank vent, overflow, or fill pipe that has a capacity of at least a 1/2 bbl [21 gal] - each fuel oil or bulk lubricating oil tank vent, overflow, and fill pipe is equipped during oil transfer operations with a portable container with at least a 5 gal [18.93 L] capacity - ships with a fill fitting for which containment is impractical have an automatic back pressure shut-off nozzle. <p>(NOTE: These requirements apply to each ship that is operated under the authority of the United States, however, provisions for exemption of public vessels exist under certain circumstances.)</p> <p style="text-align: center;">...</p> |
| <p>13-12. U.S. nonocean-going ships operating in the navigable waters of the United States are required to have the capacity to retain all oily mixtures on board (33 CFR 155.100 and 155.330).</p> <p style="text-align: center;">...</p> | <p>Verify that U.S. nonocean-going ships operating in the navigable waters of the United States have the ability to retain all oily mixtures on board and are equipped to discharge those oily mixtures to a reception facility.</p> <p>(NOTE: Retention may be done in the ship's bilges; an oil residue sludge tank is not required.)</p> <p>(NOTE: These requirements apply to each ship that is operated under the authority of the United States, however, provisions for exemptions of public vessels exist under certain circumstances.)</p> <p style="text-align: center;">...</p> |
| <p>13-13. U.S. nonocean-going ships of 100 gross tons [101,604.7 kg] or more that are fitted with main or auxiliary machinery spaces may not be operated in the navigable waters of the United States unless specific requirements are met (33 CFR 155.100 and 155.410).</p> <p style="text-align: center;">...</p> | <p>Verify that U.S. nonocean-going ships of 100 gross tons [101,604.7 kg] or more with main or auxiliary machinery spaces meet the following:</p> <ul style="list-style-type: none"> - the ship has at least one pump installed to discharge oily mixtures through a fixed piping system to a reception facility unless the ship has approved oily water separating equipment for the processing of oily bilge slops or oily fuel oil tank ballasts - the piping system has at least one outlet that is accessible from the weather deck - the ship has a stop valve for each required outlet. <p>(NOTE: These requirements do not apply to a fixed or floating drilling rig or other platform or to a ship that has approved oily water separating equipment for the processing of oily bilge slops or oil fuel tank ballast.)</p> <p>(NOTE: These requirements apply to each ship that is operated under the authority of the United States, however, provisions for exemption of public vessels exist under certain circumstances.)</p> <p style="text-align: center;">...</p> |

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| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
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| <p>13-14. Ships, except ships of less than 26 ft [7.92 m] in length, are required to have a placard fixed in a conspicuous place in each machinery space or at the bilge and ballast pump control station (33 CFR 155.100 and 155.450).</p> | <p>Verify that the placard is at least 5 in. [12.7 cm] by 8 in. [20.32 cm] and made of durable material.</p> <p>Verify that the placard states:</p> <p style="text-align: center;">DISCHARGE OF OIL PROHIBITED</p> <p>The <i>Federal Water Pollution Control Act</i> prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States or the waters of the contiguous zone, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States, if such discharge causes a film or discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial civil penalties and/or criminal sanctions including fines and imprisonment.</p> <p>Verify that the placard is printed in the language or languages of the crew.</p> <p>(NOTE: These requirements apply to each ship that is operated under the authority of the United States, however, provisions for exemptions of public vessels exist under certain circumstances.)</p> |
| <p>13-15. Ships are required to meet specific restrictions as to where oil or hazardous materials can be carried on board (33 CFR 155.100 and 155.470).</p> | <p>Verify that ships of 400 gross tons [406,418.8 kg] and above for which the building contract was in place after 1 January 1982 (or if there is no building contract, the keel was laid or is in a similar state of construction after 1 July 1982) do not carry oil or hazardous materials in the forepeak tank or a tank forward of the collision bulkhead.</p> <p>Verify that self-propelled ships of 300 gross tons [304,814.1 kg] and above, to which the above paragraph does not apply, do not carry bulk oil or hazardous materials in any space forward of a collision bulkhead, except when one of the following is met:</p> <ul style="list-style-type: none"> - for a ship constructed after 30 June 1974, fuel oil for use on the ship is carried in tanks forward of a collision bulkhead and the tanks are at least 24 in. [60.96 cm] inboard of the hull structure - for ships constructed before 1 July 1974, fuel oil for use on the ship is carried in tanks forward of a collision bulkhead if the tanks were designated, installed, or constructed for fuel oil carriage before 1 July 1974. <p>(NOTE: These requirements apply to each ship that is operated under the authority of the United States, however, provisions for exemptions of public vessels exist under certain circumstances.)</p> |

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| <p>Fuel/Transfer Operations</p> <p>13-16. Transfer operations are required to be done according to specific parameters (33 CFR 156.100 and 156.120).</p> <p>...</p> <p>13-17. In specific cases of discharges, transfer operations of oil or hazardous materials must be stopped (33 CFR 156.100 and 156.125).</p> <p>...</p> | <p>(NOTE: Fuel oil transfers for floating plants are required to be done according to 46 CFR 155 and/or 156, and 33 CFR 155 and/or 156. Fuel oil transfers for uninspected vessels are required to meet 33 CFR 156.120 and 33 CFR 155.320 for fuel coupling devices and fuel oil discharge containment (EM 385-1-1, para 26.A.28).)</p> <p>Verify that transfer operations are not conducted unless:</p> <ul style="list-style-type: none"> - the moorings are strong enough to hold during expected conditions and long enough to allow for adjustments - transfer hoses and loading arms are long enough to allow the vessel to move without straining hoses - each hose is supported to prevent kinks or other damage to the hose and strain on its coupling - each part of the transfer system is aligned to allow the flow of oil or hazardous material - parts of the transfer system not needed for the transfer are shutoff or securely blanked - the end of each hose and loading arm that is not connected for the transfer is blanked off - the transfer system is attached to a fixed connection on the vessel and the facility except that when a vessel is receiving fuel, an automatic back pressure shutoff nozzle may be used - each overboard discharge or sea suction valve that is connected to the vessel's transfer or cargo tank system is sealed or lashed in the closed positions, except when in use - transfer hoses have no unrepaired loose covers, kinks, bulges, soft spots or any other defect that would permit the discharge of material - discharge containment equipment is readily accessible - drains and scuppers are closed by mechanical means - connections in the transfer system are leak free. <p>(NOTE: These requirements apply to the transfer of oil or hazardous materials on the navigable waters or contiguous zone of the United States to, from, or within each vessel with a capacity of 250 bbl [10,500 gal] or more.)</p> <p>...</p> <p>Verify that transfer operations of oil or hazardous materials are stopped when there is a discharge:</p> <ul style="list-style-type: none"> - in the transfer operation work area - into the water or upon adjacent shoreline in the transfer area. <p>Verify that prior to restarting the transfer, the discharge is contained and cleaned up.</p> <p>(NOTE: These requirements apply to the transfer of oil or hazardous materials on the navigable waters or contiguous zone of the United States to, from, or within each vessel with a capacity of 250 bbl [10,500 gal] or more.)</p> |

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| <p>13-18. Oil or hazardous materials must not be transferred unless the declaration of inspection form has been filled out and signed (33 CFR 156.100 and 156.150).</p> <p style="text-align: center;">...</p> <p>Solid Waste</p> <p>13-19. The control and discharge of garbage must be done according to specific parameters (33 CFR 151.51, 151.66, and 151.67).</p> <p style="text-align: center;">...</p> | <p>Verify that this form has been signed prior to transfer.</p> <p>Verify that a copy of the form is retained on board the vessel or at the facility for at least 1 mo from the date of signature.</p> <p>(NOTE: These requirements apply to the transfer of oil or hazardous materials on the navigable waters or contiguous zone of the United States to, from, or within each vessel with a capacity of 250 bbl [10,500 gal] or more.)</p> <p style="text-align: center;">...</p> <p>Verify that no garbage is discharged into the navigable waters of the United States.</p> <p>Verify that no plastic or garbage mixed with plastic is discharged into the navigable waters of the United States, including synthetic ropes, fishing nets, and plastic garbage bags.</p> <p>Verify that all garbage containing plastic is discharged ashore or incinerated.</p> <p>(NOTE: These requirements apply to:</p> <ul style="list-style-type: none"> - each ship that is of U.S. registry or nationality, or one operated under the authority of the United States, including recreational vessels and uninspected vessels - each ship that is in the navigable waters of the Exclusive Economic Zone of the United States.) <p>(NOTE: These requirements do not apply to: a warship, naval auxiliary, or other ship owned or operated by the United States when in engaged in noncommercial service; or another ship specifically exempted by MARPOL 73/78. But Corps policy requires compliance with these regulations.)</p> <p style="text-align: center;">...</p> |

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| <p>Wastewater</p> <p>13-20. All COE float- ing plant engaged in civil works activities in the navigable waters of the United States, except those vessels not equipped with installed toilet facilities, are required to be equipped with MSDs that meet specific standards (ER 1125-2-302, para 4, 5(b)).</p> | <p>Verify that MSDs are designed and operated so that untreated or inade- quately treated sewage or any waste derived from sewage is not discharged into the navigable waters of the United States.</p> <p>(NOTE: Any existing vessel equipped with a Type I MSD that was installed on or before 31 July 1978 or by 1 April 1979 is in compliance as long as the device remains satisfactorily operable.)</p> <p>(NOTE: Any existing vessel equipped at any time with a Type II or III marine sanitation device certified by the U.S. Coast Guard is in compli- ance as long as the device remains satisfactorily operable.)</p> <p>Verify that new vessels are equipped with only Type II or III MSDs cer- tified by the U.S. Coast Guard.</p> <p>Verify that vessels operating on freshwater lakes or impoundments meet nondischarge standards and that any MSDs are modified to prevent accidental discharge.</p> |

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| <p>13-21. Effluent samples must be obtained from MSDs and analyzed in a competent lab to determine if flowthrough or recirculating flush media are in compliance (ER 1125-2-302, para 7).</p> <p style="text-align: center;">...</p> | <p>Verify that effluent samples are collected on a quarterly basis from installed flowthrough production units and that they are analyzed for fecal coliform and total suspended solids.</p> <p>Verify that quarterly samples are taken from installed recirculating flush media units and are tested for fecal coliform.</p> <p>Verify that copies of test results are available.</p> <p style="text-align: center;">...</p> |
| <p>Hazardous Materials</p> <p>13-22. Coast Guard approval is required before specific substances can be placed on board a vessel as ship's stores (46 CFR 147.40).</p> <p style="text-align: center;">...</p> | <p>Verify that approval was received for the presence of the following items on board:</p> <ul style="list-style-type: none"> - Class A poisons - Class A explosives - flammable gases, other than those discussed in other checklist items - forbidden materials listed in 49 CFR 172.101. <p>(NOTE: These provisions apply to the following:</p> <ul style="list-style-type: none"> - passenger vessels - small passenger vessels - steam vessels - tank vessels.) <p style="text-align: center;">...</p> |
| <p>13-23. Stowage and handling of flammable and combustible liquids, excluding liquids used as fuel for cooking, heating, and lighting but including gasoline and diesel oil, are required to be stored according to specific requirements (46 CFR 147.45).</p> | <p>Verify that no flammable/combustible liquids are stowed in any accommodation, control, or service space other than a paint locker.</p> <p>Verify that no more than 19 L (5 gal) of flammable liquids are stowed in any machinery space and that they are stowed in containers of 3.8 L (1 gal) or less.</p> <p>Verify that no more than 208 L (55 gal) of combustible liquids are stowed in any machinery space.</p> <p>Verify that an aggregate of more than 7.6 L (2 gal) of flammable or combustible liquids is stowed in a paint locker that is marked with a warning sign indicating flammable or combustible liquid storage.</p> <p>Verify that flammable and combustible liquids used as fuel for portable auxiliary equipment are stored in one of the following:</p> <ul style="list-style-type: none"> - integral tanks that form part of the vessel's structure - an independent tank meeting the design requirements found in 46 CFR 58.50 |

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| <p>13-23. (continued)</p> | <ul style="list-style-type: none"> - a container meeting the requirements found in 49 CFR 143.119 for the storage of flammable or combustible liquids - a portable outboard fuel tank meeting the specification of ABYC H-25-81 or one identified by the Underwriters Laboratories (UL) as meeting the specification of UL 1185 - a portable safety container identified by Underwriters Laboratories as meeting the specifications of UL 39 or UL 1313 - a portable safety container identified by Underwriters Laboratories as meeting the requirements of UL 1314. <p>Verify that each portable container of flammable or combustible liquid used for portable auxiliary equipment is stowed in a paint locker or an open location designated by the master.</p> <p>Verify that fuel tanks for portable auxiliary equipment using flammable/ combustible liquids are refilled on a vessel according to the following:</p> <ul style="list-style-type: none"> - appropriate containers are used that have a capacity not exceeding 6 gal [22.71 L] - portable outboard containers or portable outboard fuel tanks are refilled from a larger container of flammable or combustible liquid on the weather deck of the vessel if: <ul style="list-style-type: none"> - a drip pan of adequate size is used to collect drippings - at least one Coast Guard approved Type B, Size I fire extinguisher is within 3 m (9.75 ft). of the refilling location. <p>(NOTE: These provisions apply to the following:</p> <ul style="list-style-type: none"> - passenger vessels - small passenger vessels - steam vessels - tank vessels.) |
| <p>13-24. Cylinders of compressed gas are required to be stowed according to specific parameters (46 CFR 147.60(b)).</p> | <p>Verify that cylinders are always secured and, when not in use, stored in a rack in an upright position with the valve protection cap in place.</p> <p>Verify that lockers for storing compressed gas cylinders are vented to the open air near the top and bottom.</p> <p>Verify that cylinders are protected from all sources of heat that may cause the cylinders' temperatures to rise higher than 130 °F [54.44 °C].</p> <p>(NOTE: These provisions apply to the following:</p> <ul style="list-style-type: none"> - passenger vessels - small passenger vessels - steam vessels - tank vessels.) |

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| <p>POL Management</p> <p>13-25. Floating plant and marine works are required to make provisions to prevent the accumulation of fuel and grease on floors and decks and in bilges (EM 385-1-1, para 19.A.07(c)).</p> <p style="text-align: center;">...</p> <p>13-26. Electric lights used on or around gasoline and oil barges or other marine locations are required to be explosion proof (EM 385-1-1, para 19.A.05(f)).</p> <p style="text-align: center;">...</p> <p>13-27. A shutoff valve is required at the fuel tank connections on floating plant and marine works (EM 385-1-1, para 19.A.06(b)).</p> <p style="text-align: center;">...</p> <p>13-28. A shutoff valve is required to be installed on floating plant and marine works on the engine end of the fuel line when the length of the supply pipe is 6 ft [1.83 m] or longer (EM 385-1-1, para 19.A.06(c)).</p> <p style="text-align: center;">...</p> <p>13-29. Fuel valves on floating plant and marine works are required to be closed at the tank when shutting down for the night or more than 8 h (EM 385-1-1, para 19.A.06(d)).</p> <p style="text-align: center;">...</p> | <p>Verify that fuel and grease are not accumulating on floors and decks and in bilges.</p> <p style="text-align: center;">...</p> <p>Verify that lights are explosion proof.</p> <p style="text-align: center;">...</p> <p>Verify that a shutoff valve is in place.</p> <p>(NOTE: Arrangements are required to be made for operating the valve from outside the compartment in which the tank is located and from outside the engine compartment.)</p> <p style="text-align: center;">...</p> <p>Determine if the length of the supply line is greater than 6 ft [1.83 m].</p> <p>Verify that a shutoff valve has been installed.</p> <p style="text-align: center;">...</p> <p>Verify that valves are closed when the facility is shut down for more than 8 h.</p> <p style="text-align: center;">...</p> |

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| <p>13-30. Fuel storage tanks are required to be diked or curbed to contain the tank contents in the event of a leak (EM 385-1-1, para 19.A.06(g)).</p> | <p>Verify that tanks are diked or curbed to contain the tanks contents in accordance with NAVFAC DM-22.</p> <p>(NOTE: Instead of a dike or curb, other means of complying with the U.S. Coast Guard requirements can be used.)</p> |
| <p>...</p> <p>13-31. MPTs are required to undergo specific inspections and tests to maintain integrity (46 CFR 64.77 through 64.83).</p> | <p>...</p> <p>Verify that pressure relief and vacuum relief devices are inspected one or more times during each 12-mo period of service.</p> <p>Verify that the MPT is inspected internally and externally for corrosion, cracking, weld defects, and operational defects during the 30 mo before any month in which it is in service.</p> <p>Verify that the MPT has passed a hydrostatic test during the 60 mo before any month in which it is in service.</p> <p>Verify that the MPT passes a hydrostatic test after each welded repair.</p> <p>(NOTE: Verification of the 30-mo test and the tests of pressure relief and vacuum relief devices can be done by examining the dates on or near the tank's metal identification plate.)</p> |
| <p>...</p> <p>13-32. Portable tanks are required to be handled and stowed according to specific requirements (46 CFR 98.30-6, 98.30-7, 98.30-9, and 98.30-15).</p> | <p>...</p> <p>Verify that smoking is not allowed within 50 ft [15.24 m] of a portable tank on the deck where the tank is stowed.</p> <p>Verify that portable tanks are stowed on open decks and not:</p> <ul style="list-style-type: none"> - in the vicinity of another tank that contains a chemically incompatible product - in the area of a tank and its associated equipment that is within 10 horizontal ft [3.05 m] or 8 ft [2.44 m] above deck unless all electrical equipment is explosion-proof or intrinsically safe. <p>Verify that product is not transferred to or from a vessel unless there is a container or enclosed deck that can hold, in all conditions of vessel list or trim to be encountered during transfer, 5 gal [18.93 L] or more and has a means of draining or removing any leakage without mixing incompatible products or discharging into the water.</p> |
| <p>...</p> | <p>...</p> |

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| <p>TANK VESSELS</p> <p>Hazardous Materials</p> <p>13-33. Only certificated vessels can carry the flammable or combustible cargos listed in Appendix 13-1, including a mixture of two or more listed cargos, when they are transported in bulk (46 CFR 30.25-1).</p> <p>...</p> <p>13-34. A method for determining the level of the liquid in a cargo tank, without opening ullage holes, cargo hatches, or Butterworth plates, is required to exist on all tankships that are certified to carry Grade A liquids and that had conversion or construction started after 1 July 1951 (46 CFR 32.20-20).</p> <p>...</p> | <p>Determine if any vessels are carrying items listed in Appendix 13-1 in bulk.</p> <p>Verify that the vessel is certificated.</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are NOT navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p>(NOTE: Corps policy requires compliance with these standards.)</p> <p>...</p> <p>Determine when tankships were constructed or converted and what kind of cargo they carry.</p> <p>Verify that a method of measuring without opening ullage holes, cargo hatches, or Butterworth plates exists.</p> <p>(NOTE: Ullage holes fitted with sounding pipes tightly secured to the underside of tank tops, open at the bottom, and extending to within 18 in. or less of the bottom of the tank will be considered as complying with these provisions.)</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are NOT navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p>(NOTE: Corps policy requires compliance with these regulations.)</p> <p>...</p> |

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| <p>13-35. Lamp, oil, and paint rooms are required to be wholly and tightly lined with metal (46 CFR 32.85).</p> <p style="text-align: center;">...</p> | <p>Verify that lamp, oil, and paint rooms are wholly and tightly lined with metal.</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are NOT navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p>(NOTE: Corps policy requires compliance with these regulations.)</p> <p style="text-align: center;">...</p> |
| <p>13-36. A CO₂ or water spray system is required to be installed in all lamp and paint lockers, oil rooms, and similar spaces (46 CFR 34.05-5(a)(3)).</p> <p style="text-align: center;">...</p> | <p>Verify that vessels contracted prior to 1 January 1962 are equipped with a CO₂, water spray, or steam smothering system.</p> <p>Verify that vessels contracted prior to 19 November 1952 are equipped with a CO₂, water spray, steam smothering, or foam system.</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p>(NOTE: Corps policy requires compliance with these requirements.)</p> <p style="text-align: center;">...</p> |
| <p>13-37. The installation of magnesium sacrificial anodes in cargo tanks used for the carriage of flammable or combustible liquids is forbidden (46 CFR 35.01-25).</p> | <p>Verify that cargo tanks carrying flammable or combustible liquids are not equipped with magnesium sacrificial anodes.</p> <p>(NOTE: A sacrificial anode using an aluminum alloy is permitted in cargo tanks under the following circumstances:</p> <ul style="list-style-type: none"> - the maximum allowable energy that can be developed by a falling anode is 200 ft-lb [8.43 J] - no anode is installed more than 6 ft [1.83 m] above the bottom of the tank - each anode has at least two welded or bolted connections to the supporting structure - the plans for the system were submitted for approval.) <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p>(NOTE: Corps policy requires compliance with these regulations.)</p> |

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| <p>13-38. Open hopper type barges that do not meet the requirements in 46 CFR 32.63 concerning hull and cargo tank construction, and that are carrying cargos as listed in Appendix 13-2, are required to display additional placards or signs in four different locations (46 CFR 35.01-45(a) and 35.01-45(d)).</p> <p style="text-align: center;">...</p> | <p>Determine what cargo the barge is carrying.</p> <p>Verify that placards indicating the hazards being carried are mounted:</p> <ul style="list-style-type: none"> - approximately amidships on each side - near the centerline of each end, facing outboard. <p>(NOTE: These requirements only apply if carrying cargos listed in Appendix 13-2, which are defined as:</p> <ul style="list-style-type: none"> - flammable liquids with a Reid vapor pressure exceeding 25 psia, in independent tanks - liquefied flammable gases.) <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p style="text-align: center;">...</p> |
| <p>13-39. Manned tank barges and tankships authorized to carry Grade A, B, C, or D liquids at any temperature or Grade E liquids at elevated temperatures are required to be provided with a combustible gas indicator (46 CFR 35.30-15).</p> <p style="text-align: center;">...</p> | <p>Determine if the vessels meet the listed description.</p> <p>Verify that vessels are equipped with a combustible gas indicator.</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p style="text-align: center;">...</p> |

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| <p>13-40. Where Grades A, B, C, and D liquid cargos are involved, power driven or manually operated spark producing devices must not be used in bulk cargo tanks, fuel oil tanks, cargo pump-rooms, or enclosed spaces immediately above or adjacent to bulk cargo tanks unless specific conditions are met (46 CFR 35.30-35).</p> | <p>Verify that the following conditions are met prior to use:</p> <ul style="list-style-type: none"> - the compartment itself is gas-free - the compartments adjacent and the compartments diagonally adjacent are either gas-free, inerted, filled with water, contain Grade E liquid and are closed and secure, or are spaces in which flammable vapors and gases normally are not expected to accumulate - all other compartments of the vessel in which flammable vapors and gases may normally be expected to accumulate are closed and secured. <p>(NOTE: These restrictions do not apply to the use of small hand tools in these locations.)</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) |
| <p>13-41. Flammable liquids and gases, other than diesel fuel, that are going to be used as fuel for approved equipment are required to be stowed according to specific parameters (46 CFR 35.30-40).</p> | <p>Verify that stowage is in containers approved by the DOT and American Society of Mechanical Engineers (ASME) or in a portable container approved by a recognized testing laboratory.</p> <p>Verify that the content is marked on the containers and the containers are labeled according to DOT flammability labeling requirements.</p> <p>Verify that containers are stowed on or above the weather deck.</p> <p>(NOTE: Approved containers of 5 gal [18.93 L] or less may be stowed below the weather deck in a paint or lamp locker.)</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) |

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| <p>13-42. Tankships and tank barges, in service on all waters, that transport liquefied or compressed flammable gases are required to meet specific standards (46 CFR 30.01-5(d), 38.01-1, and 38.01-2).</p> | <p>Verify that the transportation of liquefied or compressed flammable gases on deck is done according to the requirements found in 49 CFR 171 through 179.</p> <p>Verify that when liquefied or compressed gases are being transported below decks in DOT cylinders, DOT specification portable tanks, or other approved portable tanks, the following requirements are met:</p> <ul style="list-style-type: none"> - cargo has an efficient means of ventilation, is protected from artificial heat, and is readily accessible from hatches - containers are stored so that the safety relief device is in communication with the vapor space of the container - containers are stored, dunnaged, and secured to prevent movement in any direction - containers are not overstowed in the same dry cargo space with other liquefied flammable gas containers or other cargos - containers are protected from damage from other cargo, ship's stores, or equipment - cylinders have valves protected - portable tanks have valves protected by a housing - the following are not stored in the same hold or compartment with liquefied flammable gas containers: <ul style="list-style-type: none"> - Class A, B, or C explosives - flammable solids - oxidizing materials - corrosive liquids - poisonous articles - cotton and similar fibrous materials. <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) |
| <p>13-43. Tanks are required to be inspected on a periodic basis (46 CFR 28.35-1 and 38.25-10).</p> | <p>Verify that each tank has an internal inspection:</p> <ul style="list-style-type: none"> - 10 yr after the last internal inspection if the tank is a pressure vessel type cargo tank on an unmanned barge carrying cargo at temperatures of -67 °F (-55 °C) or warmer - 8 yr after the last internal inspection for all other tanks. <p>Verify that an external inspection of unlagged tanks and the visible parts of lagged tanks is done at each inspection for certification and at other times as needed.</p> <p>Verify that cargo tank safety relief valves are inspected at least once every 2 yr.</p> |

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| <p>13-44. Pressure vessel and nonpressure vessel type cargo tanks that have passed tests and inspection are required to be marked (46 CFR 38.05-5(a)).</p> <p style="text-align: center;">...</p> <p>POL Management</p> <p>13-45. Tankships that have a keel laying date on or after 1 January 1975 are required to have a coaming or other barrier at least 3 m (1 ft) higher than adjacent spill containment barriers to prevent cargo spills from flowing aft of the housefront (46 CFR 32.56-1 and 32.56-15).</p> <p style="text-align: center;">...</p> | <p>Verify that tanks are marked to indicate that appropriate tests and inspections have been completed.</p> <p>(NOTE: For nonpressure vessel type tanks, omit the Coast Guard number and pressure vessel class.)</p> <p>Verify that markings are permanent and legible.</p> <p style="text-align: center;">...</p> <p>(NOTE: The measurement 3 m (1 ft) is how it appears in the regulation. An assumption is made that what is actually meant is 1 m (3 ft).)</p> <p>Verify that tankships with a keel laying date on or after 1 January 1975 have a coaming or other barrier at least 3 m (1 ft) higher than adjacent spill containment barriers to prevent cargo spills from flowing aft of the housefront.</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p style="text-align: center;">...</p> |

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PROJECT:

| COMPLIANCE CATEGORY: FLOATING PLANT MANAGEMENT USACE ERGO | |
|---|---|
| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
| <p>13-46. Specific provisions are required to be made for removing drainage from the pump-room bilges and adjacent cofferdams on tank vessels constructed or converted after 19 November 1952 (46 CFR 32.52-5 and 30.52-10).</p> <p>...</p> <p>13-47. Tank vessels are required to comply with specific requirements to prevent oil pollution (46 CFR 35.01-40).</p> <p>...</p> | <p>Verify that some method of drainage removal such as a separate bilge pump, ejector, or suction is available.</p> <p>Verify that the bilge pump is not located in nor the piping passes through spaces containing machinery where sources of vapor ignition are normally present.</p> <p>Verify that where bilge suction is provided from a cargo or stripping pump, a stopcheck valve is fitted in the section branch and an additional stop valve is also fitted if the bilge suction branch can be subjected to a head of oil from the filling line.</p> <p>Verify that means are provided for controlling the cargo or pump room bilge pumps and their suctions or discharges so that a flooded pump room can be pumped out.</p> <p>(NOTE: For tank vessels on which the construction or conversion started on or before 19 November 1952, the bilge pumps and piping should be made to conform with these requirements as nearly as is possible.)</p> <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p>...</p> <p>Verify that tank ships meet the requirements in:</p> <ul style="list-style-type: none"> - Section 311 of the <i>Federal Water Pollution Control Act</i> (33 USC 1321) - Section 12 of the <i>Oil Pollution Act (OPA)</i> - 33 CFR 151, 155, and 156 (see checklist items 13-4 through 13-14). <p>(NOTE: These requirements apply to all U.S. flag vessels indicated in Column 3 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States. - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is used for public purposes.) <p>...</p> |

DISTRICT:

PROJECT:

**COMPLIANCE CATEGORY:
FLOATING PLANT MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|--|
| <p>CARGO AND MISCELLANEOUS VESSELS</p> <p>Hazardous Materials</p> <p>13-48. Lamp, paint, and oil lockers are required to be constructed of steel and wholly lined with metal (46 CFR 92.05-10).</p> <p style="text-align: center;">...</p> <p>POL Management</p> <p>13-49. Fuel oil tanks with at least one side integral to the vessel's hull and located within the hull are required to undergo inspections (46 CFR 91.43).</p> <p style="text-align: center;">...</p> | <p>Verify that lamp, paint, and oil lockers are metal.</p> <p>(NOTE: These regulations apply to all U.S. flag vessels indicated in Column 5 of Appendix 13-2, except:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States and is not used for public purposes, except for vessels of the U.S. Maritime Administration.) <p style="text-align: center;">...</p> <p>Verify that prior to internal inspection, the tanks are cleaned out and gas-free.</p> <p>Verify that tanks are examined at least every 5 yr.</p> <p>(NOTE: Under the following circumstances, tanks need not be cleaned out and internally inspected:</p> <ul style="list-style-type: none"> - integral nondouble-bottom fuel oil tanks if exterior inspection shows the general condition is satisfactory - double-bottom fuel oil tanks on vessels for less than 10 yr or if external examination shows the general condition is satisfactory - all double-bottom fuel oil tanks on vessels between 10 and 15 yr of age if the marine inspector can determine by internal inspection of at least one forward double-bottom fuel oil tank and external examination of all other double-bottom fuel oil tanks that the general condition is satisfactory - all double-bottom fuel oil tanks on vessels between 15 and 25 yr of age if the marine inspector can determine by internal examination of at least one forward, one amidships, and one aft double-bottom fuel oil tank and by external examination of all other double-bottom fuel oil tanks on the vessel that the general condition is satisfactory - all double-bottom fuel oil tanks on vessels 25 yr of age or older if internal examination of at least one double-bottom fuel oil tank in way of each cargo hold/tank and external examination of all other double-bottom fuel oil tanks shows the general condition is satisfactory.) <p style="text-align: center;">...</p> |

DISTRICT:

PROJECT:

**COMPLIANCE CATEGORY:
FLOATING PLANT MANAGEMENT
USACE ERGO**

| REGULATORY REQUIREMENTS: | REVIEWER CHECKS: |
|--|---|
| <p>13-50. Cargo vessels are required to comply with specific requirements to prevent oil pollution (46 CFR 97.75).</p> <p>...</p> <p>PUBLIC VESSELS</p> <p>Hazardous Waste</p> <p>13-51. Public vessels are required to comply with the regulations for the storing, manifesting, inspecting, and record-keeping of hazardous waste under specific circumstances (<i>FFCA</i>, Section 106).</p> | <p>Verify that cargo vessels meet the following:</p> <ul style="list-style-type: none"> - Section 311 of the <i>Federal Water Pollution Control Act</i> (33 USC 1321) - Section 12 of the <i>Oil Pollution Act (OPA)</i> - 33 CFR 151, 155, and 156 (see checklist items 13-4 through 13-12 and 13-14). <p>(NOTE: These regulations apply to all U.S. flag vessels indicated in Column 5 of Appendix 13-2, except as follows:</p> <ul style="list-style-type: none"> - any vessel operating exclusively on inland waters that are not navigable waters of the United States - any vessel that is laid up, dismantled, and out of commission - any vessel that has its title vested in the United States that is not used for public purposes, except for vessels of the U.S. Maritime Administration.) <p>...</p> <p>Verify that the standards outlined in Section 4 concerning hazardous waste management are adhered to if either of the following occurs:</p> <ul style="list-style-type: none"> - the waste is stored on the public vessel for more than 90 days after the public vessel is placed in reserve or is otherwise no longer in service - the waste is transferred to another public vessel within the territorial waters of the United States and is stored on the vessel or another public vessel for more than 90 days after the date of transfer. <p>(NOTE: The 90-day period begins the earlier of the following:</p> <ul style="list-style-type: none"> - the date when the public vessel, on which the waste was generated, was placed in reserve or was otherwise no longer in service - the date when the waste was transferred from the public vessel, on which the waste was generated, to another public vessel within the territorial waters of the United States.) |

DISTRICT:

PROJECT:

Appendix 13-1

List of Flammable and Combustible Bulk Liquid Cargoes (46 CFR 30.25-1)

| Cargoes | Pollution Category |
|--|-----------------------|
| Acetone | III |
| Acetophenone | *D |
| Acetyl tributyl citrate | # |
| Acrylonitrile-Styrene copolymer dispersion in Polyether polyol | [D] |
| Alcohols (C13 and above) | III |
| Alcoholic beverages, n.o.s. | III |
| Alcohol(C6 - C17)(secondary) poly(3-6)ethoxylates | A |
| Alcohol(C6 - C17)(secondary) poly(7-12)ethoxylates | B |
| Alcohol(C12 - C15) poly(1-3)ethoxylates | A |
| Alcohol(C12 - C15) poly(3-11)ethoxylates | A |
| Alkenylsuccinic acid | # |
| Alkenylsuccinic anhydride | # |
| Alkyl(C9 - C17) benzenes | D |
| Alkylbenzenesulfonic acid (4% or less) | # |
| Alkyl phthalates (n-) <i>see individual phthalates</i> | # |
| Alkyl succinate formaldehyde hydr- oxyamino condensate (3.2% or less) | # |
| Aminoethyldiethanolamine, Amino- ethylethanolamine solution | III |
| Amyl acetate (iso-, n-) | C |
| Amyl alcohol (iso-, n-, sec-, primary) | D |
| Amyl alcohol (tert-) | III |
| Amylene <i>see</i> Pentene (all isomers) | C |
| Amyl methyl ketone <i>see</i> Methyl amyl ketone | C |
| Asphalt | I |
| Asphalt blending stocks: | |
| Roofers flux | I |
| Straight run residue | I |
| Behenyl alcohol | III |
| Benzene tricarboxylic acid tricetyl ester | III |
| Benzyl alcohol | C |
| Bicyclic terpenel polyamine amide salt | # |
| Brake fluid base mixtures (<i>containing Poly(2-8)alkylene(C2 - C3) glycols, Polyalkylene(C2 - C10) glycol monoalkyl(C1 - C4) ethers, and their borate esters</i>) | D |
| Butane | D |
| Butene <i>see</i> Butylene | |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|---|--------------------|
| Butene oligomer | B |
| Butyl acetate (sec-) | D |
| Butyl alcohol (iso-, n-, sec-, tert-) | III |
| Butyl benzyl phthalate | A |
| Butylene | LFG |
| Butylene glycol | D |
| 1,3-Butylene glycol <i>see</i> Butylene glycol | D |
| Butylene polyglycol <i>see</i> Butylene glycol | *D |
| iso-Butyl formate | D |
| n-Butyl formate | *D |
| Butyl heptyl ketone | [C] |
| Butyl methyl ketone <i>see</i> Methyl butyl ketone | D |
| Butyl stearate | III |
| Butyl toluene | *A |
| Butyrolactone (gamma) | D |
| Calcium alkylphenate | # |
| Calcium alkyl salicylate | C |
| Calcium amino nonyl phenolate | # |
| Calcium carboxylate | # |
| Caprolactam solutions | D |
| Carbon black base | # |
| Cetyl alcohol (<i>Hexadecanol</i>), <i>see</i> Alcohols (C13 and above) | *III |
| Cetyl-Stearyl alcohol | III |
| Cleaning spirit (unleaded) | # |
| Coal tar | A |
| Cumene | B |
| Cycloaliphatic resins | # |
| Cyclohexane | C |
| Cyclohexanol | C |
| 1,3-Cyclopentadiene dimer (molten) | B |
| Cyclopentadiene polymers <i>see</i> 1,3-Cyclopentadiene dimer (molten) | *B |
| Cymene (para-) | C |
| Decahydronaphthalene | D |
| Decaldehyde (n-) | *B |
| Decane | D |
| Decene | B |
| Decyl alcohol (all isomers) | B |
| Decyclobenzene (n-) | D |
| Detergent alkylate | # |
| Diacetone alcohol | D |
| Dialkyl(C10 - C14) benzenes | [D] |
| Dialkyl(C7- C13) phthalates | D |

| Cargoes | Pollution Category |
|---|--------------------|
| Dibutyl carbinol | # |
| Dibutyl phthalate (ortho-) | A |
| Dicyclopentadiene <i>see</i> 1,3-Cyclopentadiene dimer (molten) | B |
| Diethylbenzene | C |
| Diethylene glycol | III |
| Diethylene glycol butyl ether | III |
| Diethylene glycol butyl ether acetate | D |
| Diethylene glycol dibutyl ether | D |
| Diethylene glycol diethyl ether | III |
| Diethylene glycol ethyl ether | III |
| Diethylene glycol ethyl ether acetate | D |
| Diethylene glycol methyl ether | C |
| Diethylene glycol methyl ether acetate | D |
| Diethylene glycol phenyl ether | # |
| Diethylene glycol phthalate | [D] |
| Di-(2-ethylhexyl)adipate | D |
| Di-(2-ethylhexyl)phthalate | D |
| Diethyl phthalate | C |
| Diglycidyl ether of Bisphenol A | B |
| Diheptyl phthalate | III |
| Dihexyl phthalate | III |
| Diisobutylcarbinol | *C |
| Diisobutylene | B |
| Diisobutyl ketone | D |
| Diisobutyl phthalate | D |
| Diisodecyl phthalate | D |
| Diisononyl adipate | D |
| Diisononyl phthalate | D |
| Diisooctyl phthalate | III |
| Diisopropylbenzene (<i>all isomers</i>) | A |
| Diisopropyl naphalene | D |
| Dimethyl adipate | B |
| Dimethylbenzene <i>see</i> Xylenes | C |
| Dimethyl glutarate | C |
| Dimethyl phthalate | C |
| Dimethyl polysiloxane | [III] |
| 2,2-Dimethylpropane-1,3-diol | D |
| Dimethyl succinate | C |
| Dinonyl phthalate | D |
| Di(octylphenyl)amine | # |
| Dioctyl phthalate | III |
| Dipentene | C |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|--|--------------------|
| Diphenyl | A |
| Diphenyl,Diphenyl ether mixture | A |
| Diphenyl ether | A |
| Diphenyl ether, Biphenyl phenyl ether mixtures | A |
| Dipropylene glycol | III |
| Dipropylene glycol dibenzoate | [D] |
| Dipropylene glycol methyl ether | D |
| Distillates: | |
| Flashed feed stocks | I |
| Straight run | I |
| Ditridecyl phthalate | D |
| Diundecyl phthalate | D |
| Dodecane (all isomers) | III |
| Dodecanol | B |
| Dodecene (all isomers) | B |
| Dodecylbenzene | III |
| Dodecyl phenol | A |
| Drilling mud (low toxicity) (<i>if flammable or combustible</i>) | [III] |
| Epoxyated linear alcohols, C11 - C15 | # |
| Ethane | LFG |
| 2-Ethoxyethanol | D |
| 2-Ethoxyethyl acetate | C |
| Ethoxylated alcohols, C11 - C15 <i>see the Alcohol polyethoxylates</i> | A/B |
| Ethoxy triglycol (<i>crude</i>) | D |
| Ethyl acetate | D |
| Ethyl acetoacetate | D |
| Ethyl alcohol | III |
| Ethyl amyl ketone | C |
| Ethylbenzene | C |
| Ethyl butanol | @D |
| Ethyl butyrate | C |
| Ethyl cyclohexane | C |
| Ethylene | LFG |
| Ethylene carbonate | III |
| Ethylene glycol | D |
| Ethylene glycol acetate | D |
| Ethylene glycol butyl ether | III |
| Ethylene glycol butyl ether acetate | C |
| Ethylene glycol tert-butyl ether | III |
| Ethylene glycol diacetate | C |
| Ethylene glycol dibutyl ether | [D] |
| Ethylene glycol ethyl ether, <i>see</i> 2-Ethoxyethanol | D |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|--|--------------------|
| Ethylene glycol ethyl ether acetate, <i>see</i> 2-Ethoxyethyl acetate | C |
| Ethylene glycol isopropyl ether | D |
| Ethylene glycol methyl butyl ether | D |
| Ethylene glycol methyl ether | D |
| Ethylene glycol methyl ether acetate | D |
| Ethylene glycol phenyl ether | D |
| Ethylene glycol phenyl ether, Diethylene glycol phenyl ether mixture | D |
| Ethylene-Propylene copolymer (<i>in liquid mixtures</i>) | [III] |
| Ethyl-3-ethoxypropionate | [C] |
| 2-Ethylhexaldehyde <i>see</i> Octyl aldehydes | @ B |
| 2-Ethylhexanoic acid | D |
| 2-Ethylhexanol <i>see</i> Octanol (all isomers) | @ C |
| Ethylhexoic acid <i>see</i> 2-Ethylhexanoic acid | D |
| Ethyl hexyl phthalate | C |
| Ethyl hexyl tallate | # |
| Ethyl propionate | D |
| Ethyl toluene | B |
| Fatty acid (saturated, C13 and above) | III |
| Fatty acid amides | # |
| Formamide | D |
| Furfuryl alcohol | C |
| Gas oil, cracked | I |
| Gasoline blending stocks: | |
| Alkylates | I |
| Reformats | I |
| Gasolines: | |
| Automotive (<i>containing not over 4.23 g lead/gal</i>) | I |
| Aviation (<i>containing not over 4.86 g lead/gal</i>) | I |
| Casinghead (<i>natural</i>) | I |
| Polymer | I |
| Straight run | I |
| Glycerine | III |
| Glycerol <i>see</i> Glycerine | III |
| Glycerol polyakoxylate | III |
| Glycerol triacetate | III |
| Glycidyl ester of tertiary carboxylic acid <i>see</i> Glycidyl ester of tridecyl acetic acid | *B |
| Glycidyl ester of tridecyl acetic acid | B |
| Glycidyl ester of versatic acid <i>see</i> Glycidyl ester of tridecyl acetic acid | *B |
| Glycol diacetate <i>see</i> Ethylene glycol diacetate | C |
| Glycols, Resins, & Solvents mixture | # |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|--|--------------------|
| Glycol tiacetate, <i>see</i> Glyceryl triacetate | III |
| Glyoxal solution (40% or less) | D |
| Grease | # |
| Heptadecane | *III |
| Heptane (all isomers) | C |
| Heptanoic acid | D |
| Heptanol (all isomers) | C |
| Heptene (all isomers) | C |
| Heptyl acetate | B |
| Herbicide (C15 -H22 -NO2- Cl) <i>see</i> Metolachlor | *B |
| Hexaethylene glycol | * |
| Hexamethylene glycol | III |
| Hexamethyleneteraamine solutions | D |
| Hexane (all isomers) | C |
| Hexanoic acid | D |
| Hexanol | D |
| Hexene (all isomers) | C |
| Hexyl acetate | B |
| Hexylene glycol | III |
| Hog grease <i>see</i> Lard | *III |
| 2-Hydroxy-4-(methylthio)butanoic acid | [C] |
| Hydroxy terminated polybutadiene <i>see</i> Polybutadiene, hydroxyl terminated | |
| Ispphorone | D |
| Jet fuels: | |
| JP-1 (kerosene) | I |
| JP-3 | I |
| JP-4 | I |
| JP-5 (kerosene, heavy) | I |
| JP-8 | *I |
| Kerosene | I |
| Latic acid | D |
| Lard | III |
| Latex, liquid synthetic | III |
| <i>including:</i> | |
| Styrene-butadiene rubber | III |
| Carboxylated styrene-butadiene copolymer | III |
| Magnesium nonyl phenyl sulfide | # |
| Magnesium sulfonate | # |
| Maleic anhydride copolymer | # |
| 2-Mercaptobenzothiazol (<i>in liquid mixtures</i>) | # |
| Methane | LFG |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|--|--------------------|
| 3-Methoxy-1-butanol | III |
| 3-Methoxybutyl acetate | D |
| 1-Methoxy-2-propyl acetate | # |
| Methoxy triglycol <i>see</i> Triethylene glycol methyl ether | D |
| Methyl acetate | III |
| Methyl acetoacetate | D |
| Methyl alcohol | III |
| Methyl amyl acetate | C |
| Methyl amyl ketone | C |
| Methyl butanol <i>see the</i> Amyl alcohols | D |
| Methyl butenol | D |
| Methyl butyl ketone | D |
| Methyl butynol | D |
| Methyl butyrate | C |
| Methyl ethyl ketone | III |
| Methyl formal (<i>dimethyl formal</i>) | # |
| Methyl heptyl ketone | B |
| Methyl isobutyl carbinol <i>see</i> Methyl amyl alcohol | C |
| Methyl isosbutyl ketone | D |
| 3-Methyl-3-methoxybutyl acetate | III |
| Methyl naphthalene | A |
| Methyl pentene | C |
| N-Methyl-2-pyrrolidone | B |
| Methyl tert-butyl ether | D |
| Metolachlor | *B |
| Mineral spirits | I |
| Myrcene | [B] |
| Naphtha: | |
| Aromatic (<i>having less than 10% benzene</i>) | *I |
| Cracking fraction | *I |
| Heavy | *I |
| Paraffinic | *I |
| Petroleum | I |
| Solvent | *I |
| Stoddard solvent | *I |
| Varnish makers' and painters' (75%) | *I |
| Naphthalene sulfonic acid-formaldehyde copolymer, sodium salt solution | D |
| Naphthenic acid | A |
| Nonane (all isomers) | C |
| Nonanoic acid (all isomers) | D |
| Nonoic, Tridecanoic acid mixture | *D |
| Nonene | B |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|--|--------------------|
| Nonyl alcohol (all isomers) | [C] |
| Nonyl methacrylate <i>monomer</i> | D |
| Nonyl phenol | A |
| Nonyl phenol poly(4-12)ethoxylates | B |
| Nonyl phenol sulfide (90% or less) | # |
| Noxious liquid, n.o.s. (17) (<i>trade name contains principal components</i>) Category (if flammable or combustible) | D |
| Non-noxious liquid, n.o.s. (18) (<i>trade name, contains principal components</i>), Appendix III (if flammable or combustible) | III |
| Octadecene, <i>see the Olefin or alpha-Olefin entries</i> | *III |
| Octadecenoamide solution (<i>Oleamide</i>) | [D] |
| Octane (all isomers) | D |
| Octanoic acid (all isomers) | D |
| Octanol (all isomers) | C |
| Octene (all isomers) | B |
| Octyl acetate | D |
| Octyl alcohol (iso, n-) <i>see</i> Octanol (all isomers) | C |
| Octyl aldehydes | B |
| Octyl decyl adipate | III |
| Octyl epoxystallate | # |
| Octyl phthalate <i>see</i> Di-(2-ethylhexyl)phthalate | *D |
| Oil, edible | |
| Babassu | D |
| Beechnut | D |
| Castor | D |
| Cacao butter | D |
| Coconut | D |
| Cod liver | D |
| Corn | D |
| Cottenseed | D |
| Fish, <i>n.o.s.</i> | D |
| Grapeseed | # |
| Groundnut | D |
| Hazelnut | D |
| Lard | *III |
| Maize <i>see</i> Corn oil | D |
| Mustard seed | # |
| Nutmeg butter | D |
| Olive | D |
| Palm | D |
| Palm kernel | D |
| Peanut | D |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|--|-----------------------|
| Poppy | D |
| Raison seed | D |
| Rapeseed | D |
| Rice bran | D |
| Safflower | D |
| Salad | D |
| Sesame | D |
| Soya bean | D |
| Sunflower <i>see</i> Sunflower seed | D |
| Sunflower seed | D |
| Ticum | D |
| Vegetable, <i>n.o.s.</i> | D |
| Walnut | D |
| Oil, fuel: | |
| No. 1 (kerosene) | I |
| No. 1-D | I |
| No. 2 | I |
| No. 2-D | I |
| No. 4 | I |
| No. 5 | I |
| No. 6 | I |
| Oil, misc: | |
| Absorption | *I |
| Aliphatic | *I |
| Animal, <i>n.o.s.</i> | D |
| Aromatic | I |
| Aviation F2300 | *I |
| Clarified | I |
| Coal | # |
| Coconut oil, esterified <i>see</i> Coconut oil, fatty acid methyl ester | # |
| Coconut oil, fatty acid | [C] |
| Coconut oil fatty acid methyl ester | D |
| Coconut oil, methyl ester. <i>see</i> Coconut oil, fatty acid methyl ester | # |
| Cottenseed, fatty acid <i>see</i> Cottenseed oil, fatty acid | C |
| Croton | |
| Crude | I |
| Diesel | I |
| Gas, low pour | *I |
| Gas, low sulfur | *I |
| Heartcut distillate | I |
| Lanolin | D |
| Linseed | D |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|---|--------------------|
| Lubricating | I |
| Mineral | I |
| Mineral seal | *I |
| Motor | I |
| Neatsfoot | D |
| Oiticica | D |
| Palm oil, fatty acid methyl ester | D |
| Palm oil, methyl ester, <i>see</i> Palm oil, fatty acid methyl ester | # |
| Penetrating | I |
| Perilla | D |
| Pilchard | D |
| Pine | [B] |
| Range | *I |
| Residual | I |
| Resin | # |
| Resinous petroleum | *I |
| Road | I |
| Rosin | B |
| Seal | I |
| Soapstock | # |
| Soya bean (epoxidized) | # |
| Sperm | D |
| Spindle | I |
| Spray | B |
| Tall | C |
| Tall, fatty acid | C |
| Tanner's | # |
| Transformer | I |
| Tung | D |
| Turbine | I |
| Whale | C |
| White (mineral) | *I |
| Wood | # |
| alpha-Olefins (C13 - C18) | III |
| Olefins (C13 and above, all isomers) | III |
| Oleyl alcohol (<i>Octadecenol</i>), <i>see</i> Alcohols (C13 and above) | *III |
| Organic amine 70 <i>see</i> Aminoethyldiethanolamine, | |
| Aminoethyl-ethanolamine solution | III |
| Palm stearin | D |
| n-Parafins (C10 - C20) | III |
| Pentadecanol, <i>see</i> Alcohols (C13 and above) | *III |
| Pentaethylene glycol, <i>see</i> Polyethylene glycols | III |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|---|--------------------|
| Pentaethylenehexamine | D |
| Pentane (all isomers) | C |
| Pentanoic acid | D |
| Pentene (all isomers) | C |
| Petrolatum | III |
| 1-Phenyl-1-xylyl ethane | C |
| Phosphosulfurized bicyclic terpene | # |
| Phthalate plasticizers <i>see individual phthalates</i> | # |
| Pinene | B |
| Polyalkenyl succinic anhydride amine | # |
| Polyalkylene glycols, Polyalkylene glycol monoalkyl ethers mixtures | *D |
| Polyalkylene oxide polyol | [C] |
| Polyamine, amide mixture | # |
| Polybutadiene, hydroxyl terminated | [III] |
| Polybutene | III |
| Polydimethylsiloxane | # |
| Polyethylene glycol | III |
| Polyethylene glycol dimethyl ether | III |
| Polyglycerol | [III] |
| Polyisobutylene, <i>see</i> Polybutene | [III] |
| Polymerized esters | # |
| Poly(20)oxyethylene sorbitan monooleate | [B] |
| Polypropylene | [III] |
| Polypropylene glycol | D |
| Polypropylene glycol methyl ether | III |
| Polysiloxane | III |
| Polystyrene dialkyl maleate | # |
| Potassium oleate | [D] |
| Propane | LFG |
| n-Propoxypropanol | # |
| Propyl acetate (iso-) | III |
| Propyl acetate (n-) | D |
| Propyl alcohol (iso-) | III |
| Propyl alcohol (n-) | III |
| Propylbenzene (iso-) <i>see</i> Cumene | B |
| iso-Propylcyclohexane | C |
| Propylene | LFG |
| Propylene-butylene copolymer | III |
| Propylene dimer | C |
| Propylene glycol | III |
| Propylene glycol monoalkyl ether | D |
| Propylene glycol methyl ether | D |

| Cargoes | Pollution Category |
|--|--------------------|
| Propylene polymer (<i>in liquid mixtures</i>) | # |
| Propylene tetramer | B |
| Propylene trimer | B |
| Pseudocumene <i>see</i> Trimethylbenzenes | B |
| Rum, <i>see</i> Alcoholic beverages, n.o.s. | *III |
| Sodium acetate, Glycol, Water solutions | # |
| Sodium acetate solution | [D] |
| Sodium benzoate solution | [D] |
| Sodium sulfonate | # |
| Stearic acid | *III |
| Stearyl alcohol (<i>Octadecanol</i>) | III |
| Sulfolane | III |
| Tallow | D |
| Tallow alcohol, <i>see</i> Alcohols (C13 and above) | *III |
| Tallow fatty acid | D |
| Tallow <i>alkyl</i> nitrile | # |
| Tetradecanol | III |
| Tetradecene, <i>see the Olefin or alpha-Olefin entries</i> | III |
| Tetracyclobenzene | [C] |
| Tetraethylene glycol | III |
| Tetrahydroaphthalene | C |
| Tetrapropylbenzene <i>see</i> Alkyl(C9-C17) benzenes | *D |
| Toluene | C |
| Triarylphosphate | A |
| Tributyl phosphate | B |
| Tricresyl phosphate (less than 1% of the ortho isomer) | A |
| Tridecane | III |
| Tridecanoic acid | III |
| Tridecanol, <i>see</i> Alcohols (C13 and above) | III |
| Tridecene | III |
| Tridecylbenzene | [C] |
| Triethylbenzene | A |
| Triethylene glycol | III |
| Triethylene glycol butyl ether | III |
| Triethylene glycol butyl ether mixture | # |
| Triethylene glycol ethyl ether | D |
| Triethylene glycol methyl ether | D |
| Triethyl phosphate | D |
| Triisocotyl trimellitate | # |
| Triisopropanolamine | III |
| Trimethylbenzenes (all isomers) | B |

Appendix 13-1 (continued)

| Cargoes | Pollution Category |
|--|--------------------|
| Trimethylol propane polyethoxylate | D |
| 2,2,4-Trimethylpentanediol-1,3-diisobutyrate | # |
| 2,2,4-Trimethyl-3-pentanol-1-isobutyrate | # |
| Tripropylene <i>see</i> Propylene trimer | *B |
| Tripropylene glycol | III |
| Tripropylene glycol methyl ether | D |
| Trixylenyl phosphate | A |
| Turpentine | B |
| Turpentine substitute (White spirit) <i>see</i> White spirit (low(15-20%) aromatic) | *B |
| Undecenol, <i>see</i> Undecyl alcohol | B |
| Undecene | B |
| Undecylbenzene | [C] |
| Vinyl acetate-fumurate copolymer | # |
| Waxes | |
| Candelila | *D |
| Carnauba | *D |
| Paraffin | III |
| Petroleum | # |
| White spirit <i>see</i> White spirit (low (15-20%) aromatic) | *B |
| White spirit (low (15-20%) aromatic) | B |
| Wine, <i>see</i> Alcoholic beverages, n.o.s. | III |
| Wool grease | # |
| Xylenes (<i>ortho</i> -, <i>meta</i> -, <i>para</i> -) | C |
| Zinc dialkyldithiophosphate | # |

Explanation of Symbols: As used in this table, the following stand for:

| Symbol | Explanation |
|------------|--|
| A, B, C, D | NLS Category of Annex II of MARPOL 73/78. |
| I | Considered an <i>oil</i> under Annex I of MARPOL 73/78. |
| III | Appendix III of Annex II (non-NLS cargoes) of MARPOL 73/78. |
| LFG | Liquified flammable gas. |
| # | No determination of NLS status. For shipping on an oceangoing vessel, <i>see</i> 46 CFR 153.900(c). |
| [] | An NLS category in brackets indicates that the product is previously categorized and that further data are necessary. |

Appendix 13-2

Classes of Vessels (46 CFR 30.01-5(d))

| Classes of vessels (including motorboats) examined or inspected under various Coast Guard regulations ¹ | | | | | |
|--|--|---|---|--|--|
| Method of propulsion | Size or other limitations ¹ under subchapter | Vessels inspected and certificated Passenger D-Tank Vessels ² | Vessels inspected and certificated under either subchapter H-Cargo and Vessels ^{2 3 4 5} or Subchapter T-Small Passenger Vessels ^{2 3 4} | Vessels inspected and certificated under subchapter I-Uninspected Miscellaneous Vessels ^{2 5} | Vessels subject to provisions of subchapter C-Vessels ^{2 3 6 7 8} |
| Column 1 | Column 2 | Column 3 | Column 4 | Column 5 | Column 6 |
| Steam | | | | All vessels except those covered by columns 3 and 4 | None |
| Motor | Vessels not over 15 gross tons [15,240.71 kg] | | All vessels carrying more than 6 passengers ⁷ | | All vessels except those covered by columns 3, 4, 5, and 7 |
| | Vessels over 15 gross tons except seagoing motor vessels of 300 gross tons and [3048.14 kg] and over | | 1 All vessels not over 65 ft [19.81 m] in length carrying more than 6 passengers ⁷ 2 All other vessels of over 65 ft [19.81 m] in length carrying passengers for hire except documented cargo or tank vessels issued a permit to carry not more than 16 persons in addition to the crew | All vessels carrying freight for hire except those covered by columns 3 and 4 | All vessels except those covered by columns 3, 4, 5, and 7 |
| | Seagoing motor vessels of 300 gross tons [3048.14 kg] and over | All vessels carrying combustible or flammable liquid cargo in bulk ⁵ | 1 All other vessels carrying passengers, ⁷ except a Yachts b Documented cargo or tank vessels issued a permit to carry not more than 16 persons in addition to the crew | All vessels except those covered by columns 3 and 4, and those engaged in the fishing, oystering, clamming, crabbing, or any other branch of the fishery, kelp, or sponge industry | All vessels except those covered by columns 3, 4, 5, and 7 |

Appendix 13-2 (continued)

| Classes of vessels (including motorboats) examined or inspected under various Coast Guard regulations ¹ | | | | | |
|--|---|--|--|---|--|
| Method of propulsion | Size or other limitations ¹ under subchapter | Vessels inspected and certificated Passenger D-Tank Vessels ² | Vessels inspected and certificated under either subchapter H-Cargo and Vessels ^{2,3,4,5} or Subchapter T-Small Passenger Vessels ^{2,3,4} | Vessels inspected and certificated under subchapter I-Uninspected Miscellaneous Vessels ^{2,5} | Vessels subject to provisions of subchapter C-Vessels ^{2,3,6,7,8} |
| Column 1 | Column 2 | Column 3 | Column 4 | Column 5 | Column 6 |
| Sail | Vessels over 700 gross tons (406,418.8 kg) | | All vessels carrying passengers for hire | Those vessels carrying dangerous cargoes when required by 46 CFR 98 or 146 | None |
| Non-self-propelled | Vessels less than 100 gross tons (101,604.7 kg) | All vessels carrying combustible or liquid cargo in bulk | Those vessels carrying dangerous cargoes when required by 49 CFR 171-179 | Those Vessels carrying dangerous cargoes when required by 46 CFR 98 or 49 CFR 171-179 | All barges carrying passengers except those covered by column 4 |
| | Vessels 100 gross tons (101,604.7 kg) or over | All vessels carrying combustible or flammable liquid cargo in bulk | All seagoing barges except those covered by columns 3 and 4 and those inland barges carrying dangerous cargoes when required by 49 CFR 171-179 | All seagoing barges except those covered by columns 3 and 4 and those inland barges carrying dangerous cargoes when required by 46 CFR 98 or 49 CFR 171-179 | All barges carrying passengers except columns 4 and 7 |

¹Where length is used in this table it means the length measured from end to end over the deck, excluding sheer. This expression means a straight line measurement of the overall length from the foremost part of the vessel to the aftermost part of the vessel, measured parallel to the centerline.

²Subchapter E (Load Lines), F (Marine Engineering), J (Electrical Engineering), and N (Dangerous Cargoes) of this chapter may also be applicable under certain conditions. The provisions of 49 CFR 171-179 apply whenever hazardous materials are on board vessels (including motorboats), except when specifically exempted by law.

³Public nautical schoolships, other than vessels of the Navy and Coast Guard, shall meet the requirements of 46 CFR 167 of subchapter R (Nautical Schools) of this chapter. Civilian nautical schools, as defined by 46 USC 1331, shall meet the requirements of subchapter H (Passenger Vessels) and 46 CFR 168 of subchapter R (Nautical Schools) of this chapter.

⁴Subchapter H (Passenger Vessels) of this chapter covers only those vessels of 100 gross tons (101,604.7 kg) or more. Subchapter T (Small Passenger Vessels) of this chapter covers only those vessels of less than 100 gross tons (101,604.7 kg).

⁵Vessels covered by subchapter H (Passenger Vessels) or I (Cargo and Miscellaneous Vessels) of this chapter, where the principal purpose or use of the vessel is not the carriage of liquid cargo, may be granted a permit to carry a limited amount of flammable or combustible liquid cargo in bulk. The portion of the vessel used for the carriage of the flammable or combustible liquid cargo shall meet the requirements of subchapter D (Tank Vessels) in addition to the requirements of subchapter H (Passenger Vessels) or I (Cargo and Miscellaneous Vessels) of this chapter.

⁶Any vessel on an international voyage is subject to the requirements of the *International Convention for Safety of Life at Sea*, 1974.

⁷The meaning of the term *passenger* is as defined in the Act of May 10, 1956 (Sect 1, 70 Stat 151, 46 USC 390). On oceanographic vessels scientific personnel on board shall not be deemed to be passengers or seamen, but for calculations of lifesaving equipment, etc., shall be counted as persons.

⁸Boilers and machinery are subject to examination on vessels over 40 ft (12.19 m) in length.

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